KYOCERA mita

DC-1560/2050

SERVICE MANUAL

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CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

CAUTION

Double-pole/neutral fusing.

SERVICE MANUAL

DC-1560/2050

Safety precautions

This booklet provides safety warnings and precautions for our service personnel to ensure the safety of their customers, their machines as well as themselves during maintenance activities. Service personnel are advised to read this booklet carefully to familiarize themselves with the warnings and precautions described here before engaging in maintenance activities.

Safety warnings and precautions

Various symbols are used to protect our service personnel and customers from physical danger and to prevent damage to their property. These symbols are described below:

⚠**DANGER**: High risk of serious bodily injury or death may result from insufficient attention to or incorrect compliance with warning messages using this symbol.

⚠**WARNING**: Serious bodily injury or death may result from insufficient attention to or incorrect compliance with warning messages using this symbol.

⚠**CAUTION**: Bodily injury or damage to property may result from insufficient attention to or incorrect compliance with warning messages using this symbol.

Symbols

The triangle (△) symbol indicates a warning including danger and caution. The specific point of attention is shown inside the symbol.

General warning.

Warning of risk of electric shock.

Warning of high temperature.

⃠ indicates a prohibited action. The specific prohibition is shown inside the symbol.

General prohibited action.

Disassembly prohibited.

● indicates that action is required. The specific action required is shown inside the symbol.

General action required.

Remove the power plug from the wall outlet.

Always ground the copier.

1. Installation Precautions

⚠WARNING

- Do not use a power supply with a voltage other than that specified. Avoid multiple connections to one outlet: they may cause fire or electric shock. When using an extension cable, always check that it is adequate for the rated current. .....

- Connect the ground wire to a suitable grounding point. Not grounding the copier may cause fire or electric shock. Connecting the earth wire to an object not approved for the purpose may cause explosion or electric shock. Never connect the ground cable to any of the following: gas pipes, lightning rods, ground cables for telephone lines and water pipes or faucets not approved by the proper authorities. .....

⚠CAUTION

- Do not place the copier on an infirm or angled surface: the copier may tip over, causing injury. .....

- Do not install the copier in a humid or dusty place. This may cause fire or electric shock. .....

- Do not install the copier near a radiator, heater, other heat source or near flammable material. This may cause fire. .....

- Allow sufficient space around the copier to allow the ventilation grills to keep the machine as cool as possible. Insufficient ventilation may cause heat buildup and poor copying performance. .....

- Always handle the machine by the correct locations when moving it. ....

- Always use anti-toppling and locking devices on copiers so equipped. Failure to do this may cause the copier to move unexpectedly or topple, leading to injury. .....

- Avoid inhaling toner or developer excessively. Protect the eyes. If toner or developer is accidentally ingested, drink a lot of water to dilute it in the stomach and obtain medical attention immediately. If it gets into the eyes, rinse immediately with copious amounts of water and obtain medical attention. .....

- Advice customers that they must always follow the safety warnings and precautions in the copier's instruction handbook. .....

2. Precautions for Maintenance

⚠WARNING

- Always remove the power plug from the wall outlet before starting machine disassembly. .....

- Always follow the procedures for maintenance described in the service manual and other related brochures. .....

- Under no circumstances attempt to bypass or disable safety features including safety mechanisms and protective circuits. .....

- Always use parts having the correct specifications. .....

- Always use the thermostat or thermal fuse specified in the service manual or other related brochure when replacing them. Using a piece of wire, for example, could lead to fire or other serious accident. .....

- When the service manual or other serious brochure specifies a distance or gap for installation of a part, always use the correct scale and measure carefully. .....

- Always check that the copier is correctly connected to an outlet with a ground connection. .....

- Check that the power cable covering is free of damage. Check that the power plug is dust-free. If it is dirty, clean it to remove the risk of fire or electric shock. .....

- Never attempt to disassemble the optical unit in machines using lasers. Leaking laser light may damage eyesight. .....

- Handle the charger sections with care. They are charged to high potentials and may cause electric shock if handled improperly. .....

⚠CAUTION

- Wear safe clothing. Avoid wearing loose clothing or accessories such as ties which may be caught in rotating sections. .....

- Use utmost caution when working on a powered machine. Keep away from chains and belts. .....

- Handle the fixing section with care to avoid burns as it can be extremely hot. .....

- Check that the fixing unit thermistor, heat and press rollers are clean. Dirt on them can cause abnormally high temperatures. .....

- Do not remove the ozone filter, if any, from the copier except for routine replacement. .....

- Do not pull on the AC power cord or connector wires on high-voltage components when removing them; always hold the plug itself. .....

- Do not route the power cable where it may be stood on or trapped. If necessary, protect it with a cable cover or other appropriate item. .....

- Treat the ends of the wire carefully when installing a new charger wire to avoid electric leaks. .....

- Remove toner completely from electronic components. .....

- Run wire harnesses carefully so that wires will not be trapped or damaged. .....

- After maintenance, always check that all the parts, screws, connectors and wires that were removed, have been refitted correctly. Special attention should be paid to any forgotten connector, trapped wire and missing screws. .....

- Check that all the caution labels that should be present on the machine according to the instruction handbook are clean and not peeling. Replace with new ones if necessary. .....

- Handle greases and solvents with care by following the instructions below: .....
  - · Use only a small amount of solvent at a time, being careful not to spill. Wipe spills off completely.
  - · Ventilate the room well while using grease or solvents.
  - · Allow applied solvents to evaporate completely before refitting the covers or turning the main switch on.
  - · Always wash hands afterwards.

- Never dispose of toner or toner bottles in fire. Toner may cause sparks when exposed directly to fire in a furnace, etc. .....

- Should smoke be seen coming from the copier, remove the power plug from the wall outlet immediately. .....

3. Miscellaneous

⚠WARNING

- Never attempt to heat the drum or expose it to any organic solvents such as alcohol, other than the specified refiner; it may generate toxic gas. .....

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THEORY AND CONSTRUCTION SECTION

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1-1-1 Specifications DC-2050

Type	Desktop
Copying system	Dry, indirect electrostatic system
Originals	Sheets, books and 3-dimensional Maximum size: A3/11" × 17"
Original feed system	Fixed
Copy paper	Plain paper: 60 – 80 g/m^2 for drawer feed 60 – 200 g/m^2 for bypass feed Special paper: OHP film, colored paper and letter head Note: Use the bypass for special paper.
Copying sizes	Maximum: A3/11" × 17" Minimum: A6R/5$^1/_2$" × 8$^1/_2$"
Magnification ratios	64 – 141%, 1% increments Fixed ratios: Metric 1:1 ± 0.8%, 1:1.410/1:1.270/1:1.220/1:1.150/1:1.100/ 1:1.060/1:0.910/1:0.900/1:0.860/1:0.810/1:0.770/ 1:0.750/1:0.700/1:0.650/1:0.640 Inch 1:1 ± 0.8%, 1:1.290/1:1.210/1:0.780/1:0.770/1:0.730/ 1:0.640
Copy speeds	At 100% magnification: A4/11" × 8$^1/_2$": 20 copies/min. A3/11" × 17": 12 copies/min. B4 (257 × 364 mm)/8$^1/_2$" × 14": 13 copies/min.
First copy time	4.9 s or less (A4/11" × 8$^1/_2$", 100% magnification, manual exposure)
Warm-up time	45 s or less (room temperature 20°C/68°F, 65% RH)
Paper feed system	Automatic feed from the paper drawer Capacity: 250 sheets of 80 g/m^2 Manual feed from the bypass table Capacity: 50 sheets of 80 g/m^2
Multiple copying	1 – 100 copies
Photoconductor	OPC (drum diameter 60 mm)
Charging system	Single positive corona charging (drum potential: 850 V DC)
Exposure system	Slit exposure
Lens	Fixed-focal lens, f: 215 mm, F8.0
Light source	Halogen lamp, 350 W
Developing system	Dry, magnetic brush Developer: 2-component, ferrite carrier and N27T black toner Toner density control: toner sensor Toner replenishing: automatic from a toner hopper
Transfer system	Single positive corona charging, 5.2 kV DC
Separation system	Single AC corona charging, 4.1 kV AC

Fixing system	Heat roller Heat source: halogen heater (980 W) Control temperature: 175°C/347°F (at normal ambient temperature) Abnormally high temperature protection devices: 140°C/284°F and 150°C/302°F thermostats Fixing pressure: 127.4 N
Charge erasing system	Exposure by cleaning lamp
Cleaning system	Cleaning blade
Functions	(1) Self-diagnostics (2) Simulation (3) Auto clear (30 – 270 s, in intervals of 30 s) (4) Auto start (5) Auto shutoff (15 – 120 min, in intervals of 15 min) (6) Auto preheat/energy saving (5 – 45 min, in intervals of 5 min) (7) Auto exposure (8) Photo mode (9) Manual magnification selection (10) Auto magnification selection (by original size entry) (11) Auto paper selection (by original size entry) (12) Auto selection (when the ADF is used)
Power source	220 – 240 V AC, 50/60 Hz, 6.3 A
Rated power consumption	1450 W
Dimensions	775 (W) × 590 (D) × 375 (H) mm $30\frac{1}{2}$" (W) × $23\frac{1}{4}$" (D) × $14\frac{3}{4}$" (H)
Weight	Approx. 39 kg/85.8 lbs.
Floor requirements	1145 (W) × 590 (D) mm $45\frac{1}{16}$" (W) × $23\frac{1}{4}$" (D)
Accessories	Copy tray
Options	Key counter, ADF

1-1-2 Specifications DC-1560

Type ..... Desktop
Copying system ..... Dry, indirect electrostatic system
Originals ..... Sheets and books
Maximum size: A3/11" × 17"
Original feed system ..... Fixed
Copy paper ..... Plain paper: 60 – 80 g/m^2 for drawer feed
60 – 200 g/m^2 for bypass feed
Special paper: OHP film, transparencies and colored paper
Note: Use the bypass for special paper.
Copying sizes ..... Maximum: A3/11" × 17"
Minimum: A6R/5$^1/_2$" × 8$^1/_2$"
Magnification ratios ..... 64 – 141%, 1% increments
Fixed ratios:
Metric
1:1 ± 0.8%, 1:1.410/1:1.270/1:1.220/1:1.150/1:1.100/1:1.060/1:0.910/1:0.900/1:0.860/1:0.810/1:0.770/1:0.750/1:0.700/1:0.650/1:0.640
Inch
1:1 ± 0.8%, 1:1.290/1:1.210/1:0.780/1:0.770/1:0.730/1:0.640
Copy speeds ..... At 100% magnification:
A4/11" × 8$^1/_2$": 15 copies/min.
A3/11" × 17": 10 copies/min.
B4 (257 × 364 mm)/8$^1/_2$" × 14": 11 copies/min.
First copy time ..... 4.9 s or less (A4/11" × 8$^1/_2$", 100% magnification, manual exposure)
Warm-up time ..... 45 s or less (room temperature 20°C/68°F, 65% RH)
Paper feed system ..... Automatic feed from the paper drawer
Capacity: 250 sheets of 80 g/m^2
Manual feed from the bypass table
Capacity: 50 sheets of 80 g/m^2
Multiple copying ..... 1 – 100 copies
Photoconductor ..... OPC (drum diameter 60 mm)
Charging system ..... Single positive corona charging (drum potential: 850 V DC)
Exposure system ..... Slit exposure
Lens ..... Fixed-focal lens, f: 215 mm, F8.0
Light source ..... Halogen lamp, 350 W
Developing system ..... Dry, magnetic brush
Developer: 2-component, ferrite carrier and N27T black toner
Toner density control: toner sensor
Toner replenishing: automatic from a toner hopper
Transfer system ..... Single positive corona charging, 5.2 kV DC
Separation system ..... Single AC corona charging, 4.1 kV AC

Fixing system	Heat roller Heat source: halogen heater (850 W with 120 V input, 980 W with 240 V input) Control temperature: 175°C/347°F (at normal ambient temperature) Abnormally high temperature protection devices: 140°C/284°F and 150°C/302°F thermostats Fixing pressure: 127.4 N
Charge erasing system	Exposure by cleaning lamp
Cleaning system	Cleaning blade
Functions	(1) Self-diagnostics (2) Simulation (3) Auto clear (30 – 270 s, in intervals of 30 s) (4) Auto start (5) Auto shutoff (6) Auto preheat/energy saving (7) Auto exposure (8) Photo mode (9) Manual magnification selection (10) Auto magnification selection (by original size entry) (11) Auto paper selection (by original size entry) (12) Auto selection (when the ADF is used)
Power source	220 – 240 V AC, 50/60 Hz, 6.3 A 120 V AC, 60 Hz, 11.6 A
Rated power consumption	1450 W (220 – 240 V AC) 1350 W (120 V AC)
Dimensions	595 (W) × 590 (D) × 375 (H) mm $23\frac{7}{16}$" (W) × $23\frac{1}{4}$" (D) × $14\frac{3}{4}$" (H)
Weight	Approx. 39 kg/66 lbs.
Floor requirements	1120 (W) × 590 (D) mm $44\frac{1}{8}$" (W) × $23\frac{1}{4}$" (D)
Accessories	Copy tray
Options	Key counter, ADF

CONTENTS

1-2 Handling Precautions

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1-2-1 Drum

Note the following when handling or storing the drum.

- When removing the image formation unit, never expose the drum surface to strong direct light.
- Keep the drum at an ambient temperature between –20°C/ –4°F and 40°C/104°F and at a relative humidity not higher than 85%RH. Avoid abrupt changes in temperature and humidity.
- Avoid exposure to any substance which is harmful to or may affect the quality of the drum.
- Do not touch the drum surface with any object. Should it be touched by hands or stained with oil, clean it.
- If the machine is left open for more than 5 minutes for maintenance, remove the drum and store it in the drum storage bag (P/N 78369020).

1-2-2 Developer and toner

Store the developer and toner in a cool, dark place. Avoid direct light, high humidity and temperature.

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1-3-1 Part names and their functions

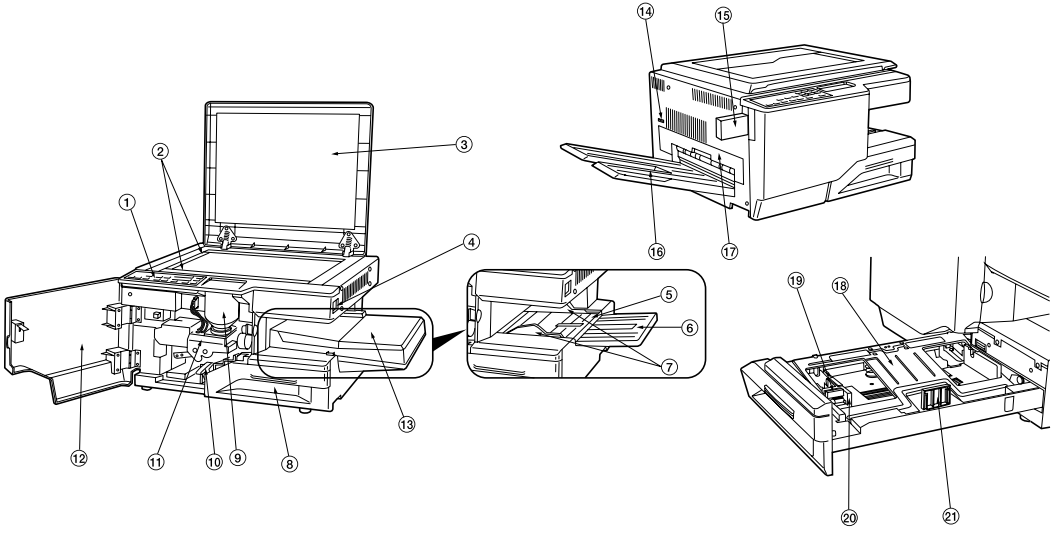
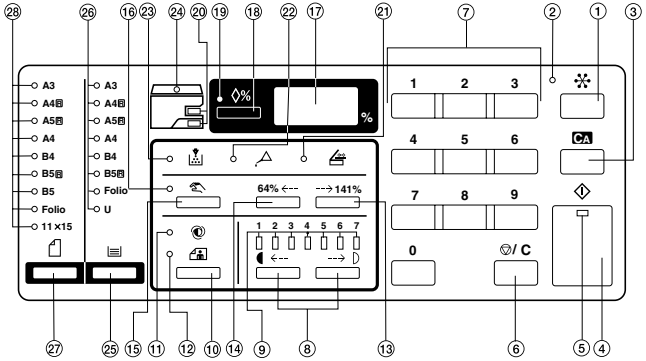


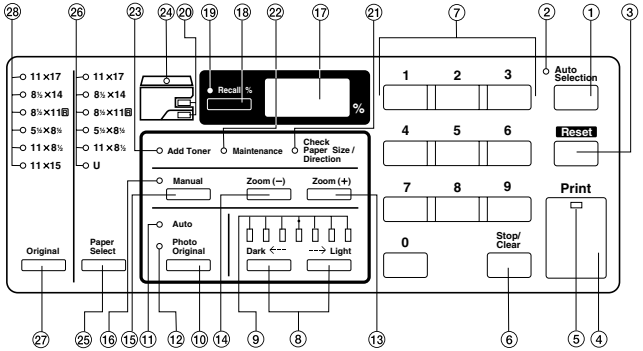
Figure 1-3-1

1. Operation panel
2. Original size indicator
3. Original holder
4. Main switch
5. Bypass table
6. Auxiliary table
7. Insertion guides
8. Paper drawer
9. Toner cartridge
10. Paper conveying section lever
11. Image formation unit
12. Front cover
13. Bypass cover
14. Total counter
15. Key counter (option)
16. Copy tray
17. Eject cover
18. Drawer bottom plate
19. Width guide tab
20. Width guide
21. Length guide

Metric



Inch



1. Auto selection key
2. Auto selection indicator
3. All clear/reset key
4. Print key
5. Copy start indicator
6. Stop/clear key
7. Numeric keys
8. Exposure adjustment keys
9. Exposure indicators
10. Auto/manual exposure key
11. Auto exposure indicator
12. Photo original indicator
13. Zoom-up key
14. Zoom-down key
15. Manual key
16. Manual indicator
17. Copy quantity/magnification display
18. Recall % key
19. Zoom copy indicator
20. Paper source indicators
21. Check paper size/direction indicator
22. Maintenance indicator
23. Add toner indicator
24. ADF jam indicator
25. Paper select key
26. Paper size indicators
27. Original select key
28. Original size indicator

Figure 1-3-2 Operation panel

1-3-2 Machine cross section

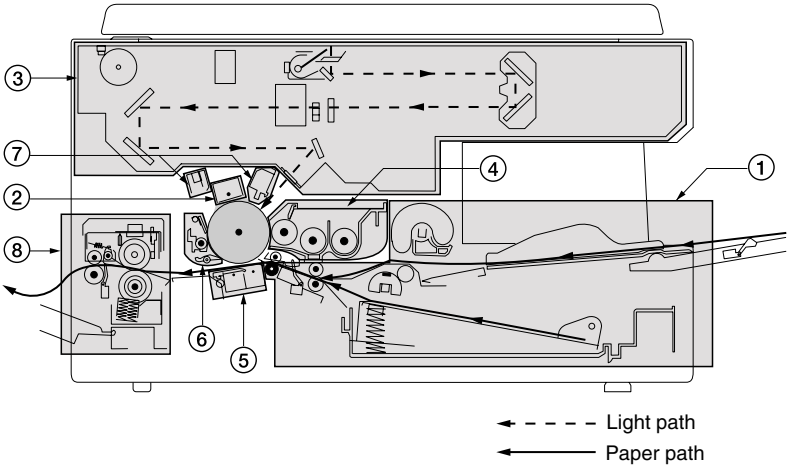


Figure 1-3-3 Machine cross section

1. Paper feed section (page 1-3-6)
2. Main charging section (page 1-3-10)
3. Exposure section (page 1-3-15)
4. Developing section (page 1-3-21)
5. Transfer and separation section (page 1-3-31)
6. Cleaning section (page 1-3-34)
7. Charge erasing section (page 1-3-35)
8. Fixing and eject section (page 1-3-37)

1-3-3 Drive system

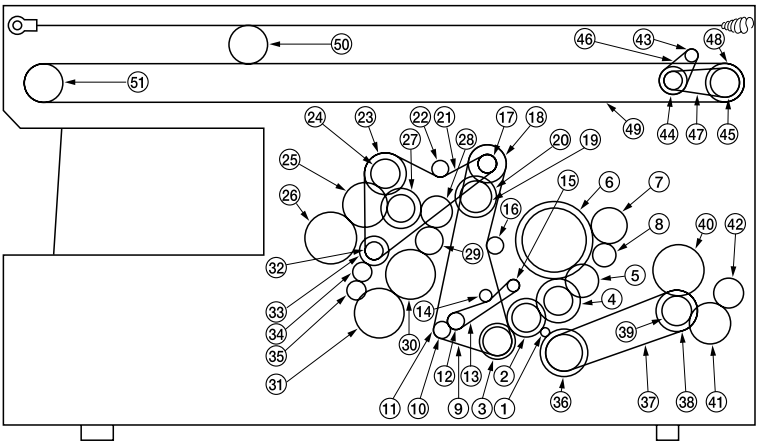
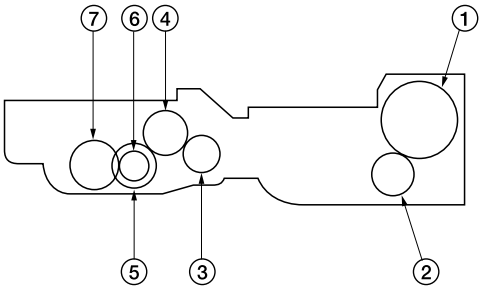


Figure 1-3-4 Drive system – copier main body

1. Drive motor gear
2. Gear 60/40
3. Gear 60/24
4. Gear 64/20
5. Gear 23
6. Gear 60/50
7. Blade thrust gear 31
8. Toner recycle gear 19
9. Developing drive belt
10. Pulley 16 (machine rear)
11. Gear 25 (machine front)
12. Registration gear 15/30
13. Feed belt
14. Registration collar
15. Pulley 15
16. Tension pulley 15
17. Gear 33/14 (machine rear)
18. Developing gear 32 (machine front)
19. Developing gear 23
20. Developing gear 30
21. Paper feed drive belt
22. Tension pulley 15
23. Pulley 32
24. Gear 18
25. Idle gear 38
26. Bypass gear 38
27. Gear 30/18
28. Gear 25
29. Idle gear
30. Idle gear 38
31. Paper feed gear 38
32. Pulley 14
33. Gear 20
34. Retard gear 18
35. Limiter gear 15
36. Gear 80/34
37. Fixing drive belt
38. Pulley 30
39. Fixing drive gear 22
40. Heat roller gear 40
41. Eject idle gear 30
42. Eject gear 22
43. Scanner motor pulley
44. Scanner drive pulley 1
45. Scanner drive pulley 2
46. Scanner drive belt 1
47. Scanner drive belt 2
48. Scanner wire drum
49. Scanner wire
50. Scanner wire pulley
51. Scanner wire pulley



As viewed from machine rear

Figure 1-3-5 Drive system – image formation unit

1. Blade thrust gear 31
2. Toner recycle gear 19
3. Magnet roller gear 17
4. Developing idle gear 19
5. Left spiral gear (machine rear)
6. Developing gear 28 (machine front)
7. Developing gear 31 (machine front)

1-3-4 Mechanical construction

(1) Paper feed section

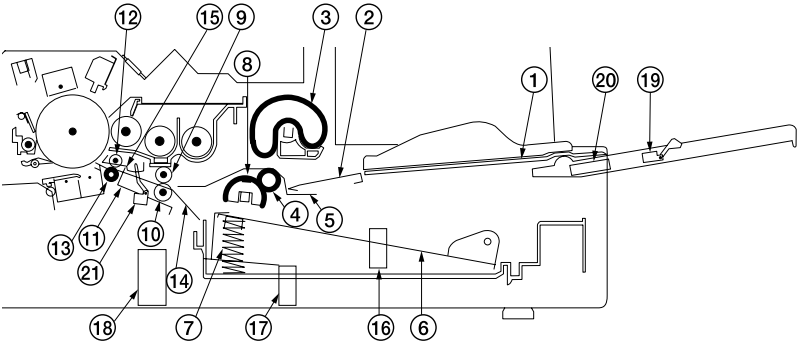


Figure 1-3-6 Paper feed section

① Bypass table
② Bypass lift
③ Bypass upper pulley
④ Bypass lower pulley
⑤ Bypass lower guide
⑥ Drawer bottom plate
⑦ Drawer spring
⑧ Paper feed pulleys A and B
⑨ Upper registration roller
⑩ Lower registration roller
⑪ Registration stopper
⑫ Upper pre-transfer roller
⑬ Lower pre-transfer roller
⑭ Registration guide
⑮ Upper pre-transfer guide
⑯ Bypass solenoid (BYPSOL)
⑰ Paper feed solenoid (PFSOL)
⑱ Registration solenoid (RSOL)
⑲ Bypass paper length switch (BYPPLSW)
⑳ Bypass paper width switch (BYPPWSW)
㉑ Registration switch (RSW)

The paper feed section consists of the primary feed and secondary feed subsections. Primary feed conveys paper from the paper drawer or the bypass table to the upper and lower registration rollers, at which point secondary paper feed takes place and the paper travels to the transfer section in sync with the exposure timing.

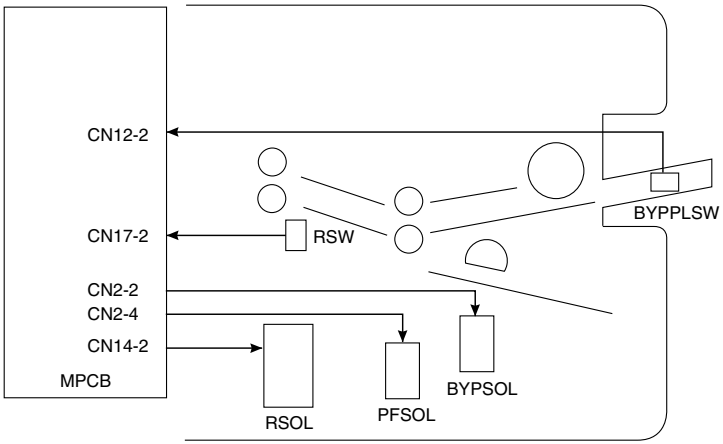
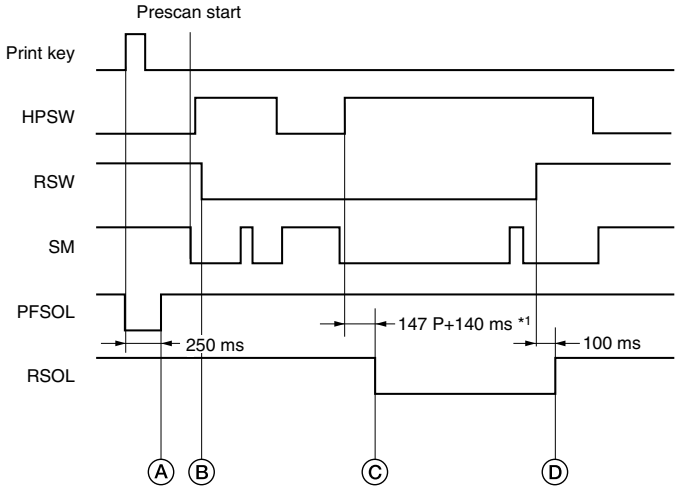


Figure 1-3-7 Paper feed section block diagram

(1-1) Paper feed from the paper drawer

The paper drawer consists of the drawer bottom plate, drawer springs and other components and can hold up to 250 sheets of copy paper.

Paper is fed out of the drawer by the rotation of paper feed pulleys A and B.



Auto exposure mode, A4/11" × 8 1/2" copy paper, magnification ratio 100%
*1 Varies depending on the setting by simulation 27.

Timing chart 1-3-1 Paper feed from the paper drawer

Ⓐ When the print key is pressed, the paper feed solenoid (PFSOL) turns on for 250 ms, rotating paper feed pulleys A and B to perform primary feed. Then the paper is fed by the upper and lower registration rollers and its leading edge stops at the registration stopper to create slack in the paper before registration.

Ⓑ The leading edge of the paper turns the registration switch (RSW) on.

Ⓒ The scanner starts scanning and the home position switch (HPSW) turns off. After 147 pulses + 140 ms, the registration solenoid (RSOL) turns on and the registration stopper lowers. The lower registration and pre-transfer rollers convey the paper to start secondary feed.

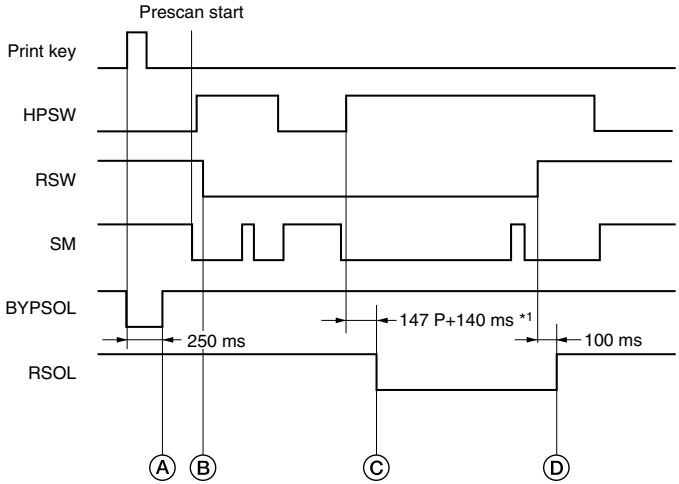
Ⓓ 100 ms after the trailing edge has turned the registration switch (RSW) off, the registration solenoid (RSOL) turns off to complete secondary paper feed.

(1-2) Paper feed from the bypass table

The bypass table can hold up to 50 sheets of paper at one time.

When the print key is pressed, the bypass solenoid (BYPSOL) turns on, rotating the bypass upper pulley, while the bypass lift is raised until the paper comes into contact with the bypass upper pulley. The paper on the bypass table is then conveyed to the secondary paper feed section.

The bypass lower pulley rotates opposite to the paper feed direction so that the torque limiter prevents multiple sheets from being fed at one time.



Auto exposure mode, A4/11" × 8 1/2" copy paper, magnification ratio 100%
*1 Varies depending on the setting by simulation 27.

Timing chart 1-3-2 Paper feed from the bypass table

Ⓐ When the print key is pressed, the bypass solenoid (BYPSOL) turns on for 250 ms, which raises the bypass lift and rotates the bypass lower pulley to perform primary paper feed. The paper is then fed by the upper and lower registration rollers until the leading edge stops at the registration stopper to create slack in the paper before registration.

Ⓑ The leading edge of the paper turns the registration switch (RSW) on.

Ⓒ The scanner starts scanning and the home position switch (HPSW) turns off. After 147 pulses + 140 ms, the registration solenoid (RSOL) turns on and the registration stopper lowers. The lower registration and pre-transfer rollers convey the paper to start secondary feed.

Ⓓ 100 ms after the trailing edge of the paper turns the registration switch (RSW) off, the registration solenoid (RSOL) turns off to complete secondary paper feed.

(2) Main charging section

The main charging section consists of the drum and main charger. The drum is electrically charged uniformly by means of a grid to form a latent image on the surface.

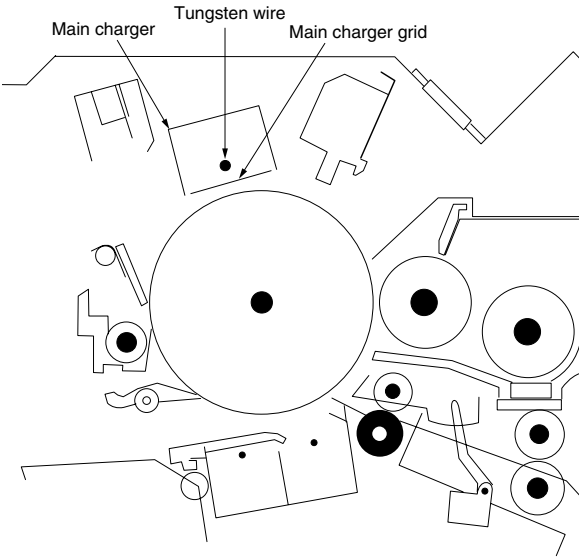


Figure 1-3-8 Main charging section

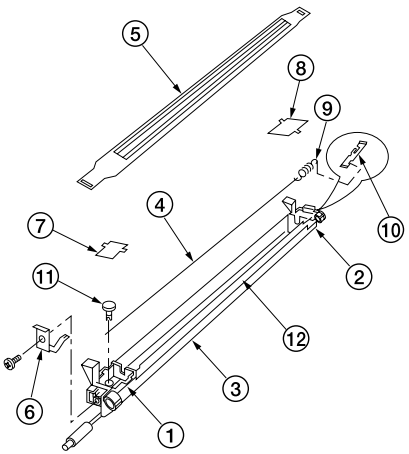


Figure 1-3-9 Main charger

① Main charger front housing
② Main charger rear housing
③ Main charger shield
④ Tungsten wire
⑤ Main charger grid
⑥ Grid tension plate
⑦ Main charger front lid
⑧ Main charger rear lid
⑨ Charger spring
⑩ Charger terminal
⑪ Charger wire retainer pin
⑫ Film

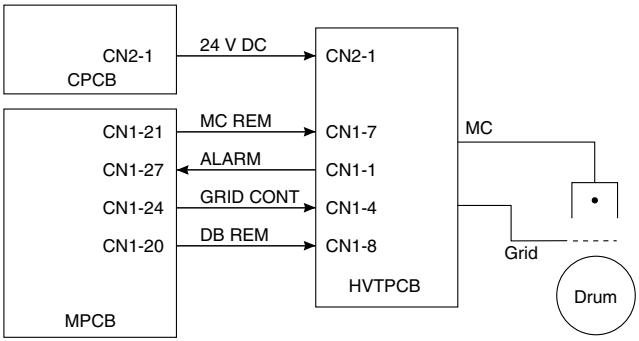
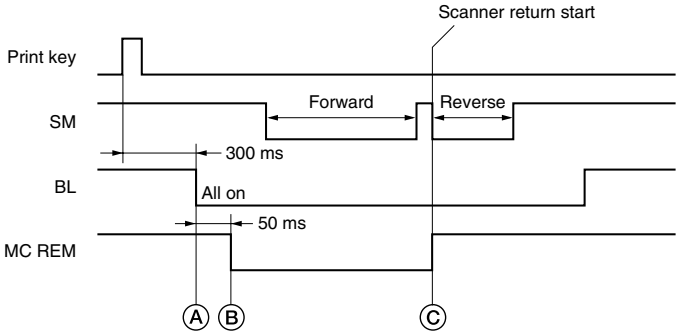


Figure 1-3-10 Main charging section block diagram



Timing chart 1-3-3 Main charging

Ⓐ 300 ms after the print key is pressed, all the blank lamps (BL) turn on.
Ⓑ 50 ms after the all blank lamps (BL) have turned on, main charging starts.
Ⓒ As soon as the scanner starts to return, main charging ends.

Surface potential correction control

The drum surface potential is corrected for the external temperature and humidity. If the external temperature is 24°C/75.2°F or less and the absolute humidity exceeds 25.0 g/m^3, the drum surface potential is corrected as in the table bellow. The external temperature and relative humidity are detected by the external temperature thermistor (ETTH) and humidity sensor (HUMSENS) and the absolute humidity is calculated from these values. The surface potential is corrected by varying the grid control voltage (GRID CONT) output from the main PCB (MPCB) to the high-voltage transformer PCB (HVTPCB).

Table 1-3-1 Surface potential correction value vs. absolute humidity

Absolute humidity (g/m^3)	Correction value (V)	Absolute humidity (g/m^3)	Correction value (V)	Absolute humidity (g/m^3)	Correction value (V)
0.0	0	10.5	0	20.5	0
0.5	0	11.0	0	21.0	0
1.0	0	11.5	0	21.5	0
1.5	0	12.0	0	22.0	0
2.0	0	12.5	0	22.5	0
2.5	0	13.0	0	23.0	0
3.0	0	13.5	0	23.5	0
3.5	0	14.0	0	24.0	0
4.0	0	14.5	0	24.5	0
4.5	0	15.0	0	25.0	0
5.0	0	15.5	0	25.5	–4
5.5	0	16.0	0	26.0	–8
6.0	0	16.5	0	26.5	–12
6.5	0	17.0	0	27.0	–16
7.0	0	17.5	0	27.5	–20
7.5	0	18.0	0	28.0	–24
8.0	0	18.5	0	28.5	–28
8.5	0	19.0	0	29.0	–32
9.0	0	19.5	0	29.5	–36
9.5	0	20.0	0	30.0	–40
10.0	0				

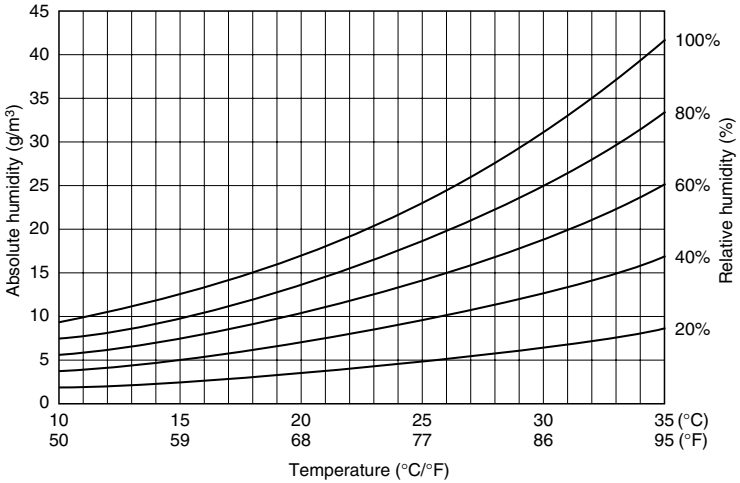


Figure1-3-11 Absolute humidity vs. relative humidity

Table 1-3-2 Surface potential correction value vs. external temperature

Temperature (°C/°F)	Correction value (V)	Temperature (°C/°F)	Correction value (V)	Temperature (°C/°F)	Correction value (V)
0/32	83	13/55.4	40	26/78.8	0
1/33.8	80	14/57.2	37	27/80.6	0
2/35.6	77	15/59	33	28/82.4	0
3/37.4	73	16/60.8	30	29/84.2	0
4/39.2	70	17/62.6	27	30/86	0
5/41	67	18/64.4	23		
6/42.8	63	19/66.2	20		
7/44.6	60	20/68	17		
8/46.4	57	21/69.8	13		
9/48.2	53	22/71.8	10		
10/50	50	23/73.4	7		
11/51.8	47	24/75.2	3		
12/53.6	43	25/77	0		

(3) Exposure section

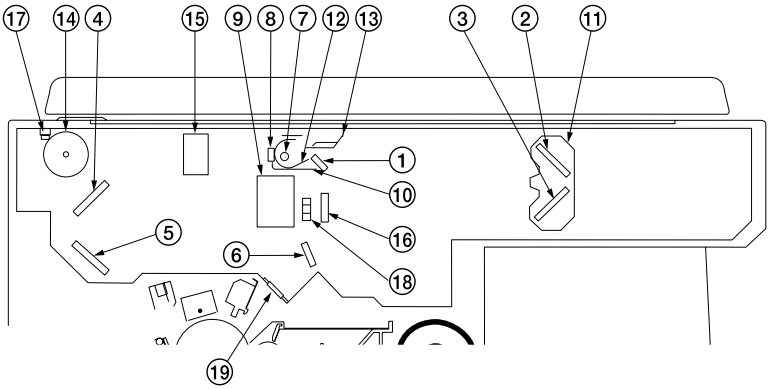


Figure 1-3-12 Exposure section

① Mirror 1
② Mirror 2
③ Mirror 3
④ Mirror 4
⑤ Mirror 5
⑥ Mirror 6
⑦ Halogen lamp (HL)
⑧ Optical section thermostat (TH3)
⑨ Lens
⑩ Light source unit 1
⑪ Light source unit 2
⑫ Main reflector
⑬ Auxiliary reflector
⑭ Scanner motor (SM)
⑮ Optical section fan motor (OPFM)
⑯ AE sensor (AES)
⑰ Home position switch (HPSW)
⑱ Lens home position switch (LHPSW)
⑲ Dust filter

This copier employs a slit exposure system with a fixed original table, and a halogen lamp (HL) as the light source.
The optical section consists of light source units 1 and 2. Light source unit 1 carries the halogen lamp and the main and auxiliary reflectors. Each unit travels from one side of the machine to the other along scanner rails at machine front and rear. When an enlargement or a reduction ratio is selected, the scanning speeds of the two light source units and the positions of the lens and mirrors 4 and 5 are changed, altering the distance between the original and the drum. At any magnification ratio, light source unit 2 travels at a half speed of unit 1.
A cooling fan is installed to exhaust heat generated by the halogen lamp. If an abnormally high temperature is detected around light source unit 1, the optical section thermostat (TH3) shuts off the supply to the halogen lamp.

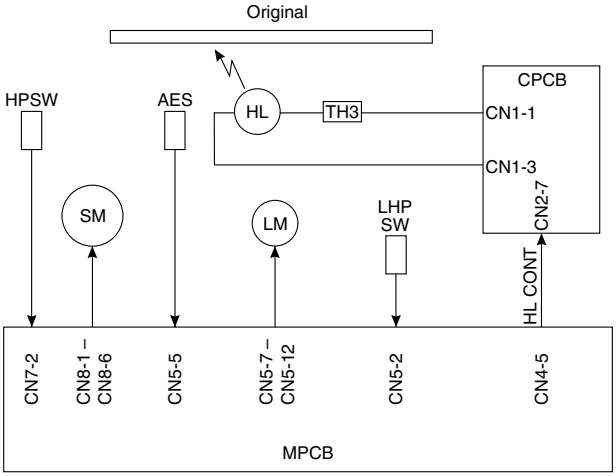
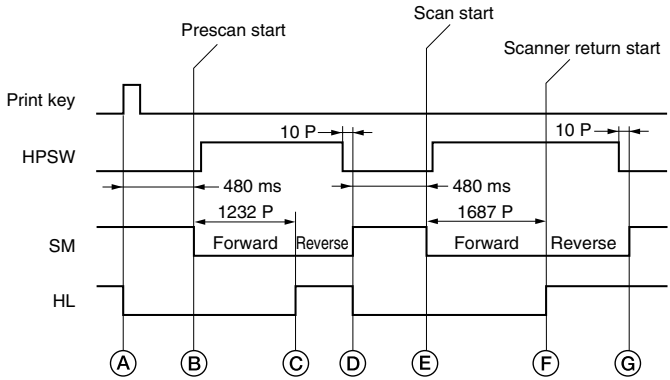


Figure 1-3-13 Exposure section block diagram



Auto exposure mode, A4/11" × 8 1/2" original

Timing chart 1-3-4 Scanner travel

Ⓐ When the print key is pressed, the halogen lamp (HL) lights at the intensity for prescan.
Ⓑ 480 ms after the halogen lamp (HL) has turned on, the scanner motor (SM) rotates forward for prescan.
Ⓒ After rotating forward 1232 pulses, the scanner motor (SM) reverses to return the scanner to the home position. At the same time, the halogen lamp (HL) turns off.
Ⓓ 10 pulses after the home position switch (HPSW) has been turned on, the scanner motor (SM) turns off and the scanner stops. At the same time, the halogen lamp (HL) lights for exposure.
Ⓔ 480 ms after turning off, the scanner motor (SM) rotates forward for scanning.
Ⓕ After rotating forward for 1687 pulses, the scanner motor (SM) reverses to return the scanner to the home position. At the same time, the halogen lamp (HL) turns off.
Ⓖ 10 pulses after the home position switch (HPSW) has turned on, the scanner motor (SM) turns off and the scanner stops.

Exposure control for manual exposure and photo modes

The halogen lamp light intensity for manual exposure and photo modes is calculated from the data obtained by running simulation 24.

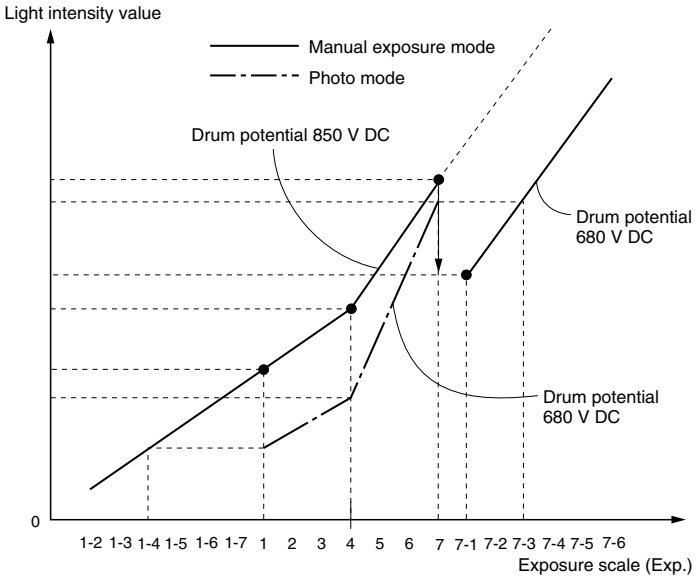

Light intensity value
Manual exposure mode
Photo mode
Drum potential 850 V DC
Drum potential
680 V DC
Drum potential
680 V DC
0
1-2 1-3 1-4 1-5 1-6 1-7 1 2 3 4 5 6 7 7-1 7-2 7-3 7-4 7-5 7-6
Exposure scale (Exp.)

Figure 1-3-14 Exposure gradient setting

• Exposure control for manual exposure mode

The gradient between Exp. 1-2 and Exp. 7 is determined from the halogen lamp light intensity values for Exp. 1, Exp. 4 and Exp. 7 set in simulation 24. For exposure settings Exp. 7-1 and above the drum potential is set 170 V below the normal level and the light intensity is reduced since the intensity at such high exposure levels cannot be increased by simply increasing the halogen lamp control voltage. The amount of exposure for the high settings between Exp. 7-1 and Exp. 7-6 is determined by the halogen lamp light intensity value for Exp. 7-1 set in simulation 24 and the gradient between Exp. 4 and Exp. 7.

• Exposure control for photo mode

The drum potential is set 170 V below the normal level and the halogen lamp light intensity value is set low for photo mode.

The halogen lamp light intensity value for photo-mode Exp. 4 is determined by running simulation 24. The light intensity for manual-mode Exp. 1-4 is used as the value for photo-mode Exp. 1, which determines the gradient between Exp. 1 and Exp. 4 for photo mode. Similarly, the light intensity for manual-mode Exp. 7-3 is used as the value for photo-mode Exp. 7, which determines the gradient between photo-mode Exp. 4 and Exp. 7.

Exposure control for auto exposure mode

In auto exposure mode, the halogen lamp lights at the intensity set for mode 1 in simulation 22 to perform prescan. The exposure level to copy that particular original is determined by using the value read in by the AE sensor.

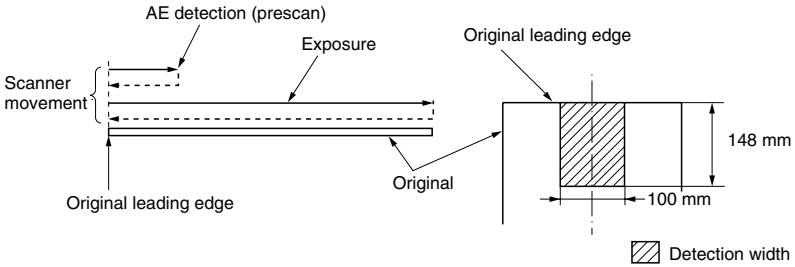


Figure 1-3-15 AE sensor detection width

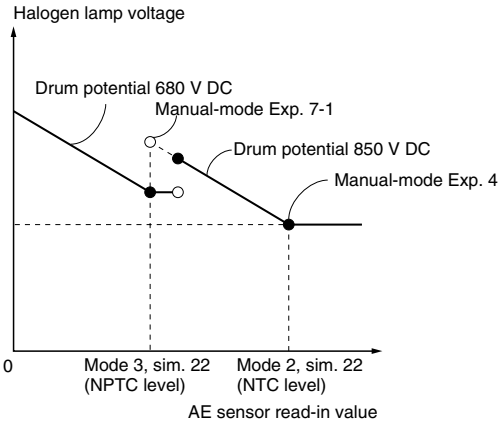

Halogen lamp voltage
Drum potential 680 V DC
Manual-mode Exp. 7-1
Drum potential 850 V DC
Manual-mode Exp. 4
0
Mode 3, sim. 22 (NPTC level)
Mode 2, sim. 22 (NTC level)
AE sensor read-in value

Figure 1-3-16 Exposure control for auto exposure mode

The halogen lamp voltage is controlled so that the lamp lights at the intensity for manual-mode Exp. 4 when the AE sensor read-in value is the NTC level set in mode 2 by simulation 22, and at the intensity for manual-mode Exp. 7-1 when the read-in value is the NPTC level set in mode 3.
In auto exposure mode, the drum potential is decreased by 170 V from the normal level and the halogen lamp voltage is increased when the AE sensor read-in value is below the setting for mode 3 in simulation 22. When the AE sensor read-in value falls in the range between the mode 3 and mode 2 settings by simulation 22, the halogen lamp voltage is controlled based on the gradient determined by the values set by simulation 24. For read-in values above the mode 2 setting of simulation 22, the halogen lamp voltage is kept at a constant level so that the lamp lights at the intensity for manual-mode Exp. 4.

Light intensity correction for enlargement and reduction modes

The halogen lamp light intensity for enlargement and reduction modes is determined by the value for copying at 100% magnification and the correction values set by simulation 29.

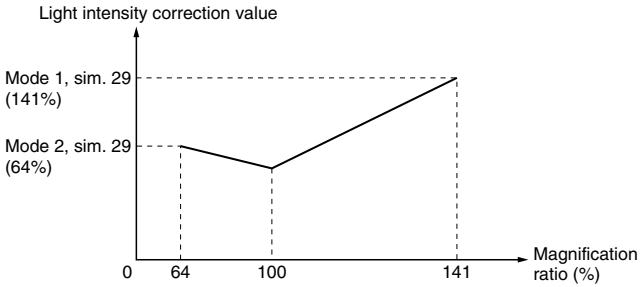


Figure 1-3-17 Correction of light intensity for reduction and enlargement modes

The correction values for reduction (64%) and enlargement (141%) copying are linked by a straight line through the value for 100% magnification, and the light intensity is corrected for individual magnification ratios according to the gradients.

Light intensity correction by the user setting

The light intensity data can be corrected in exposure adjustment of the user settings by pressing an exposure adjustment key in manual exposure mode or the auto/manual exposure key in auto exposure mode for 5 s. The light intensity correction value is 0 at Exp. 4 and changes at 4 bits per 0.5 steps of the exposure scale.

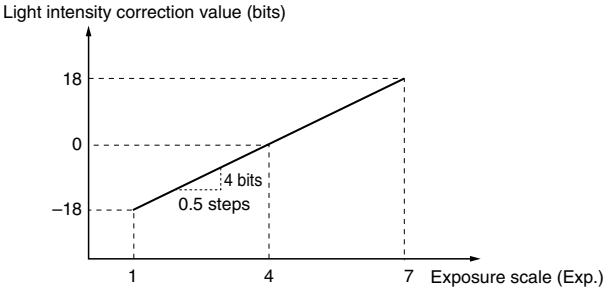


Figure 1-3-18 Light intensity correction by user setting

(4) Developing section

The developing section consists of the developing assembly and toner hopper.

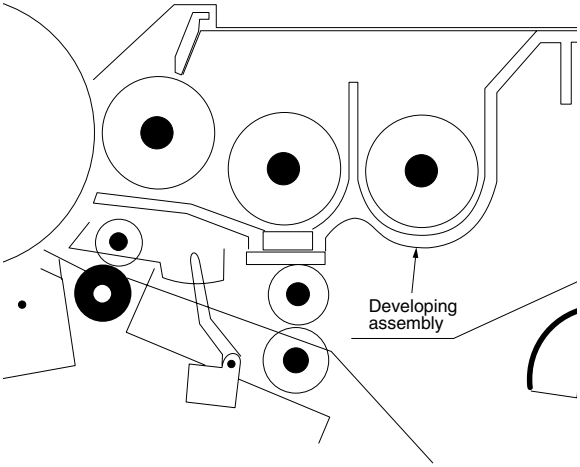


Figure 1-3-19 Developing section

The developing assembly consists of the developing roller where a magnetic brush is formed, doctor blade and the developing spirals that agitate the developer.
In the toner hopper new toner from the toner cartridge is mixed with residual toner recovered from the cleaning section, and the mixture is conveyed to the developing assembly.
The amount of toner in the toner hopper is monitored by the toner level sensor (TLDS).

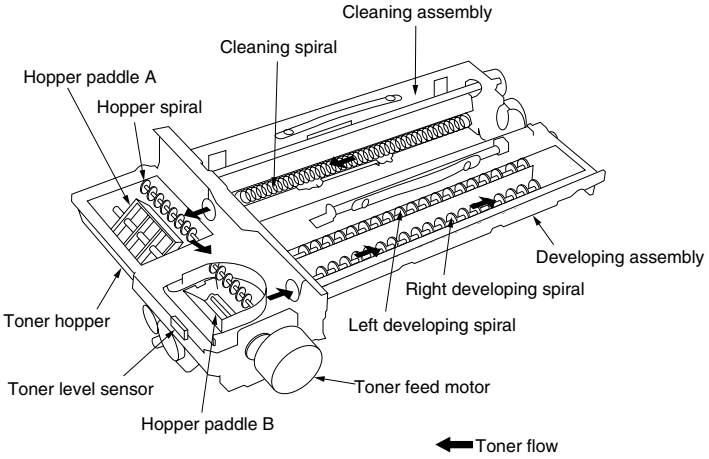
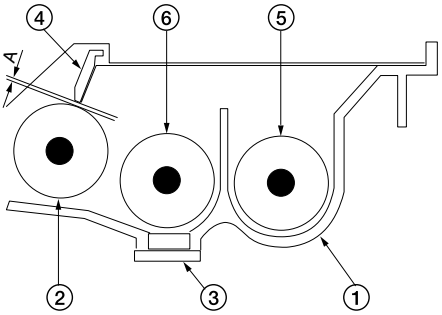


Figure 1-3-20 Toner recycling

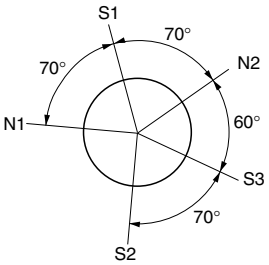
Formation of the magnetic brush

The developing roller consists of a magnet roller with five poles and a sleeve roller. Rotation of the sleeve roller around the magnet roller entrains developer, which in turn forms a magnetic brush at pole N1 on the magnet roller. The height of the magnetic brush is regulated by the doctor blade; the developing result is affected by the positions of the poles on the magnet roller and the position of the doctor blade.
A developing bias voltage generated by the high-voltage transformer PCB (HVTPCB) is applied to the developing roller to provide image contrast.



A: distance between the doctor blade and developing roller: 0.6 ± 0.05 mm

Magnetic poles on the magnet roller



N1: $850 \times 10^{-4} \pm 50 \times 10^{-4}$T
N2: $600 \times 10^{-4} \pm 50 \times 10^{-4}$T
S1: $600 \times 10^{-4} \pm 50 \times 10^{-4}$T
S2: $600 \times 10^{-4} \pm 50 \times 10^{-4}$T
S3: $500 \times 10^{-4} \pm 50 \times 10^{-4}$T

Figure 1-3-21 Forming the magnetic brush

① Developing unit housing
② Developing roller
③ Toner sensor (TNS)
④ Doctor blade
⑤ Right developing spiral
⑥ Left developing spiral

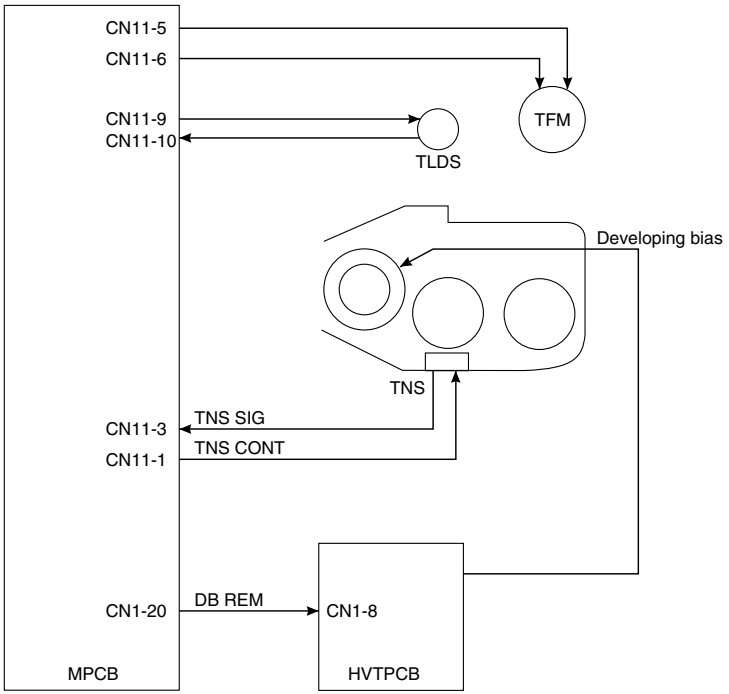


Figure 1-3-22 Developing unit block diagram

Toner density is detected by the toner sensor (TNS).
The sensor section of the toner sensor detects the ratio of toner to carrier in the developer near it and converts it into a voltage. As more toner is used, the ratio of toner to carrier decreases, increasing the toner sensor output voltage.
When the ratio drops below the specified value, the increase in toner sensor output voltage triggers toner replenishing. When toner is added and the ratio of toner to carrier returns to normal, the toner sensor output voltage drops to the point where toner replenishing stops.

Toner density control

Toner density is controlled by switching the toner feed motor on/off using as the reference the toner sensor output based on the toner sensor initial output value set when simulation 60 was executed when the developer was set. The toner sensor output is also used for toner empty detection in the toner hopper. On this device, a magnetic proximity sensor toner level sensor (TLDS) is also used, but the toner remaining amount is not detected until the toner empty state is detected from the toner sensor output voltage.

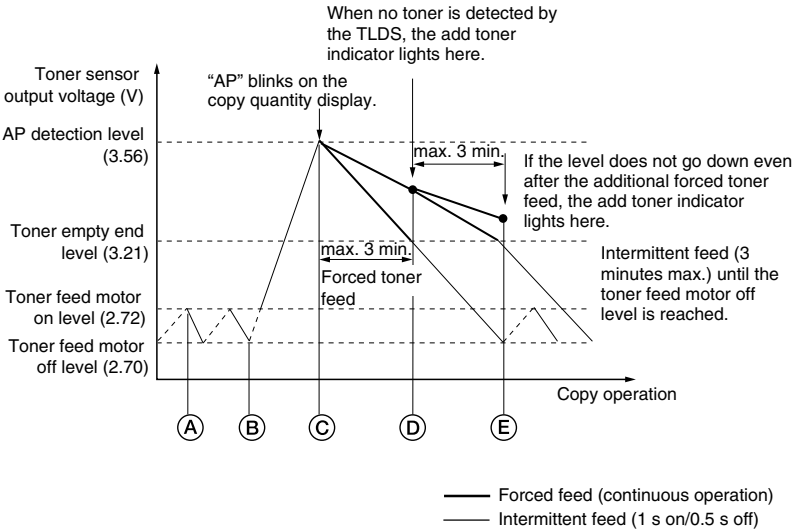

When no toner is detected by the TLDS, the add toner indicator lights here.
Toner sensor output voltage (V)
"AP" blinks on the copy quantity display.
AP detection level (3.56)
max. 3 min.
If the level does not go down even after the additional forced toner feed, the add toner indicator lights here.
Toner empty end level (3.21)
max. 3 min.
Forced toner feed
Intermittent feed (3 minutes max.) until the toner feed motor off level is reached.
Toner feed motor on level (2.72)
Toner feed motor off level (2.70)
Copy operation
A
B
C
D
E
Forced feed (continuous operation)
Intermittent feed (1 s on/0.5 s off)

Figure 1-3-23

Ⓐ When the toner sensor output voltage exceeds the toner feed motor on level, the toner feed motor intermittent feed (1 s on, 0.5 s off) operation is carried out to feed the toner.
Ⓑ When the toner is fed and the toner sensor output voltage falls below the toner feed motor off level, the intermittent feed operation is stopped.
Ⓒ When the toner in the toner hopper runs low and, even though the toner intermittent feed operation is continued, the toner sensor output voltage rises above the AP detection level, "AP" blinks on the copy quantity display and the toner feed motor forced feed (continuously on) operation starts. At the same time, the amount of toner remaining is detected by the toner level sensor.

Ⓓ If the toner sensor output voltage falls to the toner empty end level within the toner feed motor forced feed operation time (3 minutes max.), the copier returns to the ready state and intermittent feed operations (3 minutes max.) are carried out until the toner sensor output voltage drops to the toner feed motor off level. If the toner sensor output voltage does not fall to the toner empty end level within the forced feed operation time, the following operations are carried out according to the state of the toner level sensor.

A: When the toner level sensor detects that there is no toner remaining.
After the forced feed operation time ends, the add toner indicator lights.

B: When the toner level sensor does not detect that there is no toner remaining.
The forced feed operation is continued for an extra period of no more than three minutes.

Ⓔ If the toner sensor output voltage does not return to the toner empty end level within the additional forced feed operation time, after the end of the additional forced feed operation time, the add toner indicator lights.
If the toner sensor output voltage falls to the toner empty end level within the additional forced feed operation time, the copier returns to the ready state and intermittent feed operations (3 minutes max.) are carried out until the toner sensor output voltage drops to the toner feed motor off level.

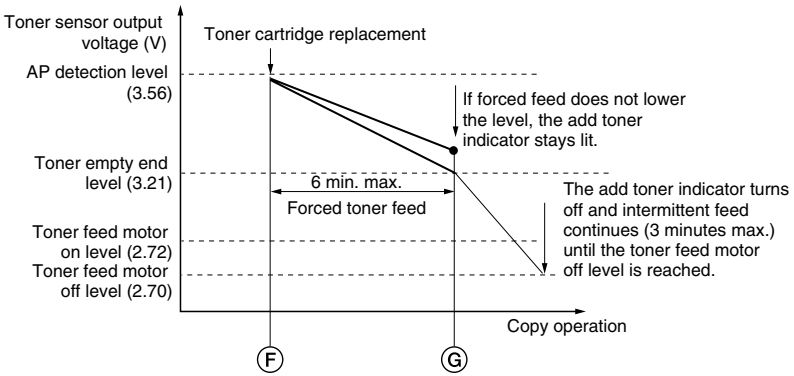

Toner sensor output voltage (V)
Toner cartridge replacement
AP detection level (3.56)
If forced feed does not lower the level, the add toner indicator stays lit.
Toner empty end level (3.21)
6 min. max.
Forced toner feed
The add toner indicator turns off and intermittent feed continues (3 minutes max.) until the toner feed motor off level is reached.
Toner feed motor on level (2.72)
Toner feed motor off level (2.70)
Copy operation
Ⓕ
Ⓖ

Figure 1-3-24

Ⓕ After the toner cartridge is replaced, the forced feed operation (6 minutes max.) is started by turning safety switch 1 off/on. During the forced feed operation time, the toner is fed and when the toner sensor output voltage reaches the toner empty end level, the “AP” goes out and the copier goes into the ready state. Further intermittent feed operations (3 minutes max.) are carried out until the toner sensor output voltage reaches the toner feed motor off level.

Ⓖ If the toner sensor output voltage does not reach the toner empty end level within the forced feed operation time, the add toner indicator stays lit even after the end of the forced feed operation time.

Correcting toner sensor output voltage

The toner density is subject to humidity changes and the developing unit drive time. To maintain the toner density constant, the toner sensor output voltage (TNS SIG) is corrected by the toner sensor control voltage (TNS CONT).

TNS CONT = A + B – C
TNS CONT: toner sensor control voltage (V)
A: setting by simulation 60
B: absolute humidity correction value
C: drive time correction value

• Correction based on the absolute humidity
When high absolute humidity is detected, the toner sensor control voltage (TNS CONT) is decreased.
The external temperature and relative humidity are read from the external temperature thermistor (ETTH) and humidity sensor (HUMSENS) and the absolute humidity is calculated from these values. (Refer to Figure 1-3-11 “Absolute humidity vs. relative humidity” on page 1-3-14.)

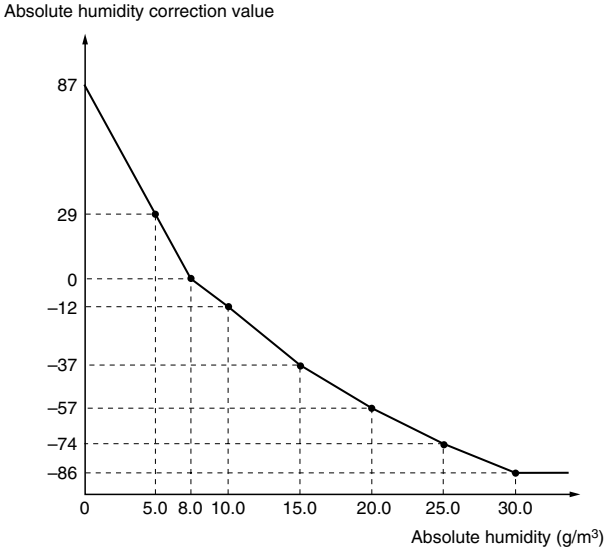


Figure 1-3-25 Correction based on the absolute humidity

Computing the absolute humidity

The humidity sensor (HUMSENS) and external temperature thermistor (ETTH) are located on the humidity sensor PCB (HUMPCB). The humidity sensor (HUMSENS) converts the relative humidity detected by the humidity sensing element into a voltage and sends it to the main PCB (MPCB). The main PCB computes the absolute humidity based on this HUMSENS signal and the temperature (ETTH signal) detected by the external temperature thermistor.

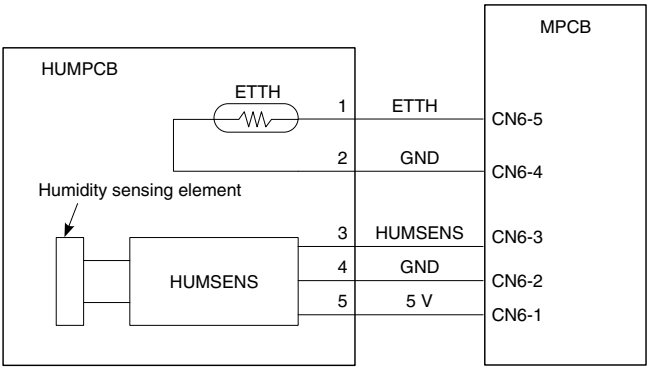


Figure 1-3-26 Absolute humidity computation block diagram

• Correction based on the drive time

The toner sensor control voltage (TNS CONT) is decreased as the developing unit drive time [the total time the drive motor (DM) has been on] increases from execution of simulation 60.

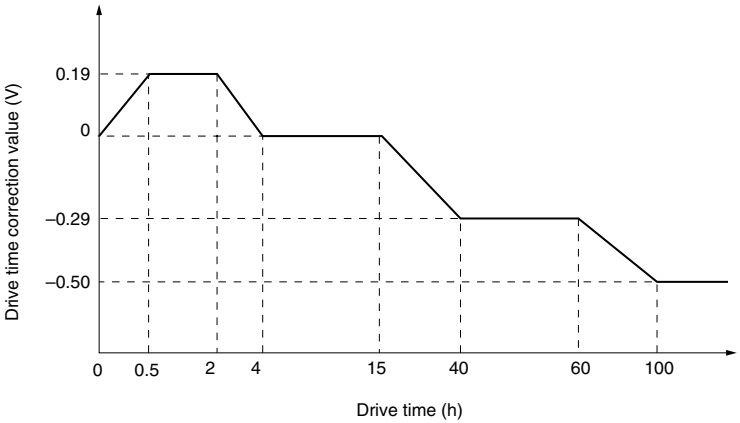


Figure 1-3-27 Correction based on the drive time

Toner level detection

The toner level in the toner hopper is monitored by the toner level sensor (TLDS).

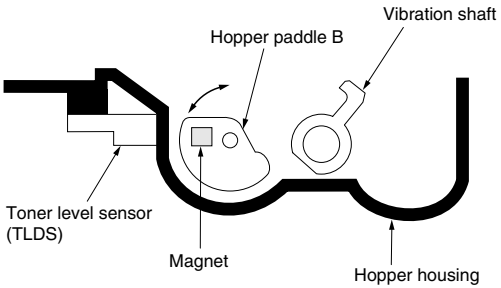


Figure 1-3-28 Toner level detection

The toner level sensor (TLDS) is a magnetic proximity sensor which is turned on by the magnet on hopper paddle B moving close to it. When the toner feed motor (TFM) is turned on, hopper paddle B vibrates up and down. If the appropriate amount of toner is present in the toner hopper, the paddle moves slowly, resulting in a shorter on-time of the toner level sensor (TLDS). As the toner in the hopper is consumed, the paddle moves faster, increasing the sensor's on-time. During toner replenishing, the toner empty condition is detected and the add toner indicator lights up when the toner level sensor (TLDS) has stayed on 800 ms or longer three times successively. With the add toner indicator on, the available copy mode and the number of copies that can be made are restricted as set in simulation 91 (see page 3-2-31).

(5) Transfer and separation section

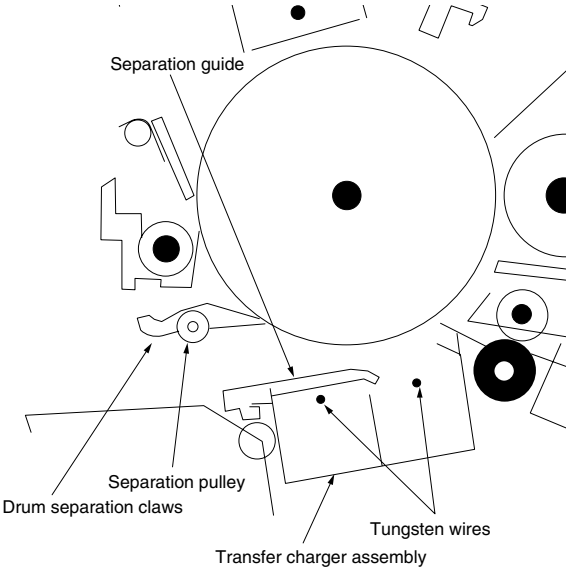


Figure 1-3-29 Transfer and separation section

The transfer and separation section consists of the transfer charger assembly and drum separation claws.
The transfer charger assembly consists of the transfer charger, which applies a high voltage to transfer the toner image from the drum surface onto the paper, and the separation charger that helps the paper separate from the drum surface.
In the transfer charger, a high voltage generated by the high-voltage transformer PCB (HVTPCB) is applied across both ends of the tungsten wire for transfer charging.
The separation charger uses the AC voltage applied from the high-voltage transformer PCB to neutralize the residual charge on the paper after transfer. The paper can then separate from the drum under its own weight. The drum separation claws ensure the paper separates from the drum reliably.

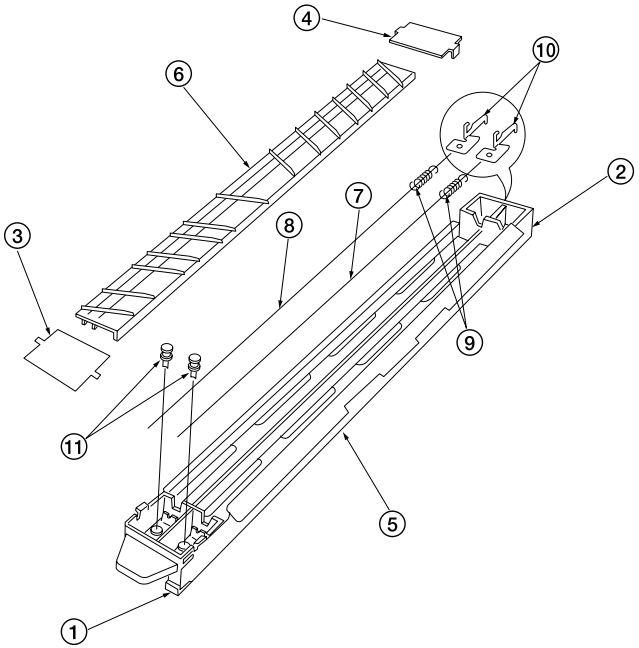


Figure 1-3-30 Transfer charger assembly

① Transfer charger front housing
② Transfer charger rear housing
③ Transfer charger front lid
④ Transfer charger rear lid
⑤ Transfer charger shield
⑥ Separation guide
⑦ Tungsten wire for transfer
⑧ Tungsten wire for separation
⑨ Charger springs
⑩ Charger terminals
⑪ Charger wire retainer pins

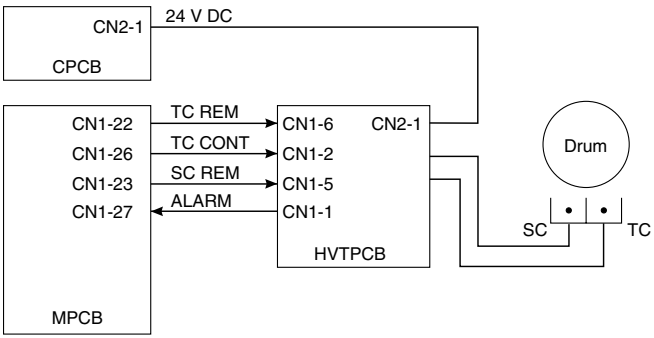
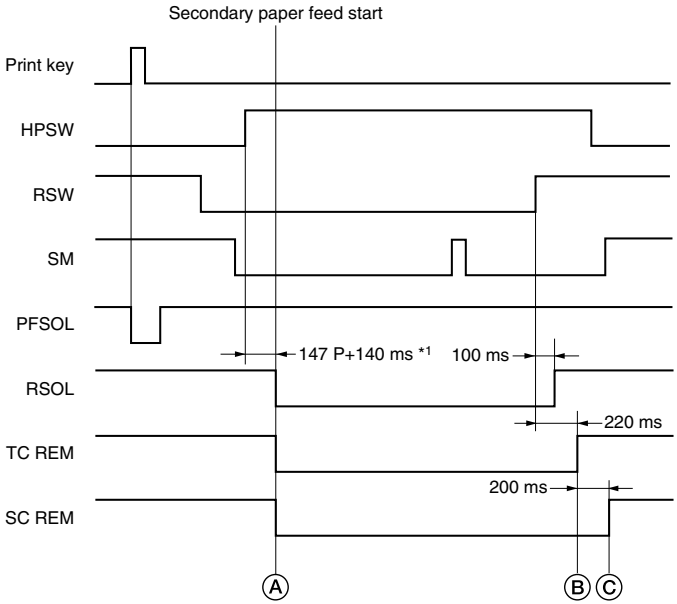


Figure 1-3-31 Transfer and separation section block diagram



*1 Varies depending on the setting by simulation 27.

Timing chart 1-3-5 Transfer and separation

Ⓐ 147 pulses + 140 ms after the scanner has started scanning and the home position switch (HPSW) has turned off, transfer and separation charging starts and the registration solenoid (RSOL) turns on to start secondary paper feed.
Ⓑ 220 ms after the trailing edge of the paper has turned the registration switch (RSW) off, transfer charging ends.
Ⓒ 200 ms after transfer charging has ended, separation charging ends.

(6) Cleaning section

The cleaning section consists of the cleaning blade which removes residual toner from the drum surface after transfer, and the cleaning spiral that carries the residual toner back to the toner hopper.

The cleaning unit employs the blade cleaning method.

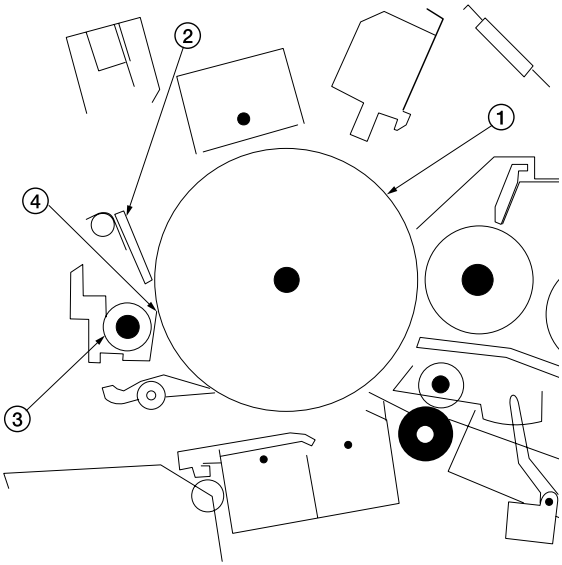


Figure 1-3-32 Cleaning section

① Drum
② Cleaning blade
③ Cleaning spiral
④ Lower cleaning seal

(7) Charge erasing section

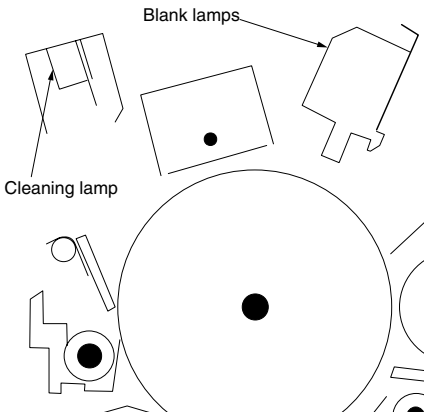


Figure 1-3-33 Charge erasing section

The charge erasing section consists of the blank lamps and the cleaning lamp.
The blank lamps (BL) are 44 LEDs. All the LEDs light to create leading edge and trailing edge blank cut margins. During exposure, the required number of the 44 blank lamps on both sides are lit depending on the paper size and the magnification ratio, removing charge from the sections of the copy where no image is to be formed.
The cleaning lamp (CL) removes residual charge from the drum surface.

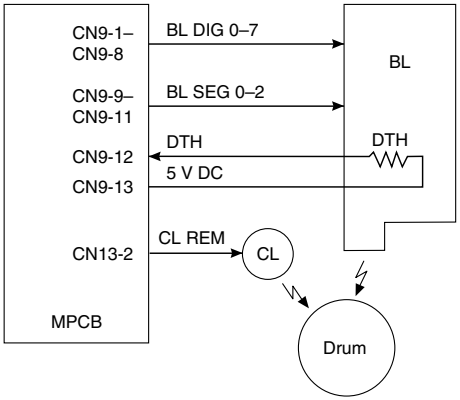
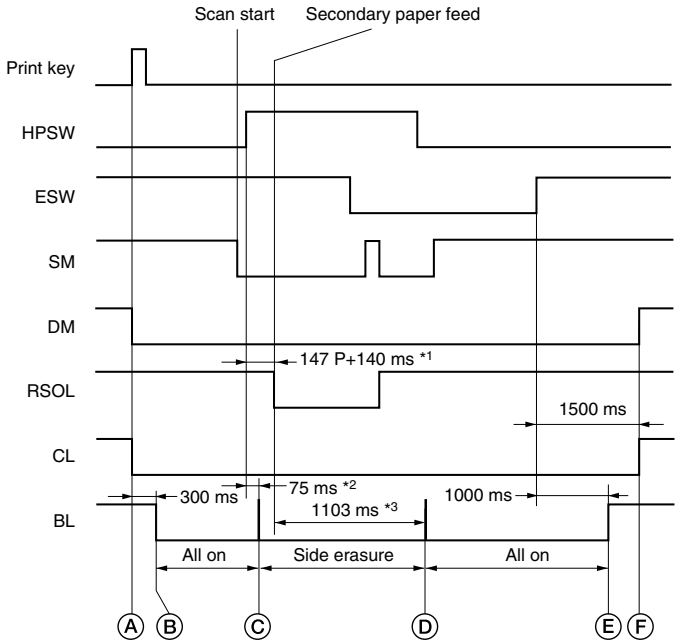


Figure 1-3-34 Charge erasing section block diagram



Manual exposure mode, A4/11" × 8 1/2" copy paper, magnification ratio 100%
*1 Varies depending on the setting by simulation 27.
*2 Varies depending on the magnification ratio and the setting by simulation 54.
*3 Varies depending on the setting by simulation 59.

Timing chart 1-3-6 Charge erasing

Ⓐ When the print key is pressed, the drive motor (DM) and cleaning lamp (CL) turn on to remove residual charge from the drum surface after residual toner has been removed in the cleaning section.
Ⓑ 300 ms after the print key is pressed, all the blank lamps (BL) turn on.
Ⓒ 75 ms after the scanner has started scanning and the home position switch (HPSW) has turned off, the required number of blank lamps (BL) for side erasure light depending on the paper size and the magnification ratio, removing unnecessary charge in the non-image forming area.
Ⓓ 1103 ms after the secondary paper feed has started and the registration solenoid (RSOL) has turned on, all the blank lamps (BL) turn on.
Ⓔ 1000 ms after the last sheet has been ejected turning the eject switch (ESW) off, the blank lamps (BL) turn off.
Ⓕ 1500 ms after the eject switch (ESW) has turned off, the drive motor (DM) and cleaning lamp (CL) turn off at the same time.

(8) Fixing and eject section

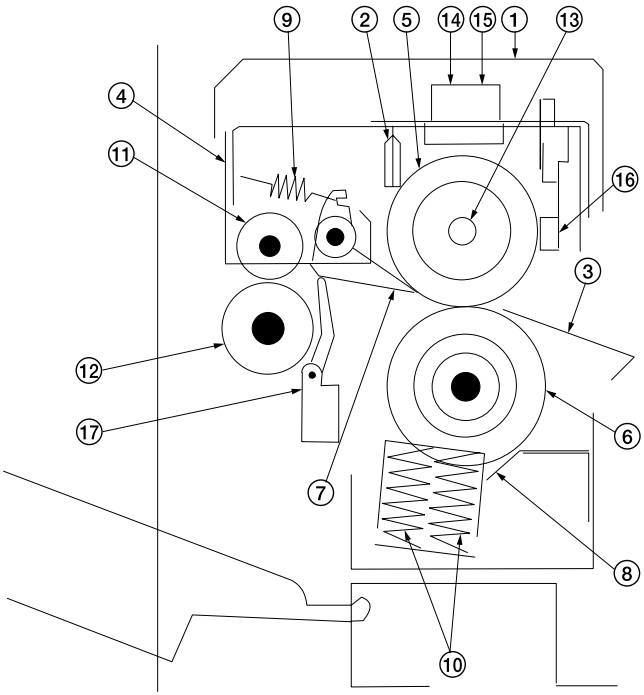
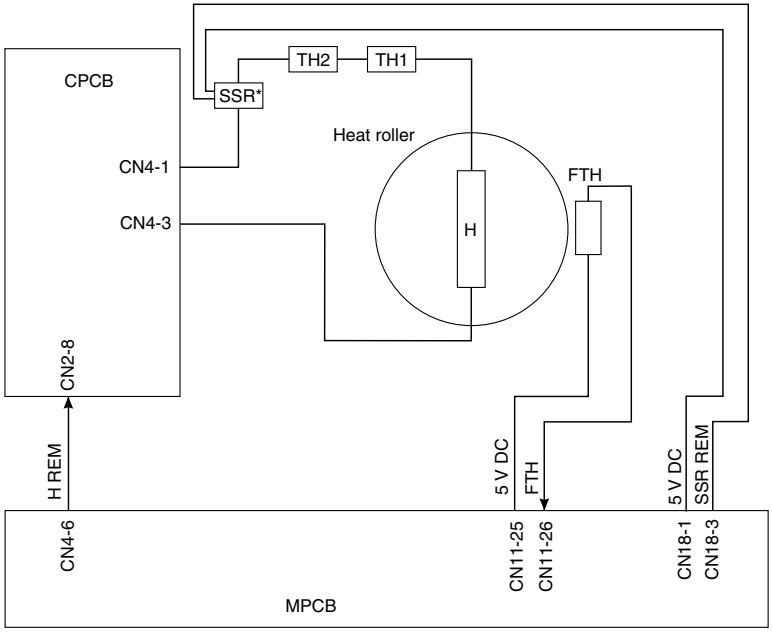


Figure 1-3-35 Fixing and eject section

① Fixing unit cover
② Fixing unit blade
③ Fixing unit front guide
④ Fixing unit upper guide
⑤ Heat roller
⑥ Press roller
⑦ Heat roller separation claws
⑧ Press roller separation claws
⑨ Separation claw springs
⑩ Fixing pressure springs
⑪ Upper eject pulley
⑫ Lower eject roller
⑬ Fixing heater (H)
⑭ Fixing unit thermostat 1 (TH1)
⑮ Fixing unit thermostat 2 (TH2)
⑯ Fixing unit thermistor (FTH)
⑰ Eject switch (ESW)

The fixing and eject section consists of the parts shown in Figure 1-3-35. When the paper reaches the fixing section after the transfer process, it passes through the gap between the press roller and heat roller, which is heated by the fixing heater (H), where pressure is applied by the pressure springs so that toner on the paper is melted and fused onto the paper.
When the fixing process is completed, the paper is separated from the heat and press rollers by their separation claws and is ejected out of the copier by the rotation of the upper eject pulley and lower eject roller.



*For 230 V specifications only.

Figure 1-3-36 Fixing section block diagram

Heating the heat roller and detecting temperature

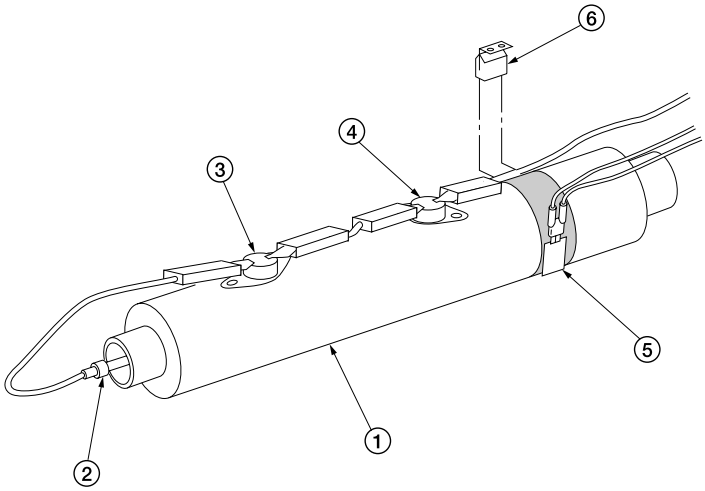
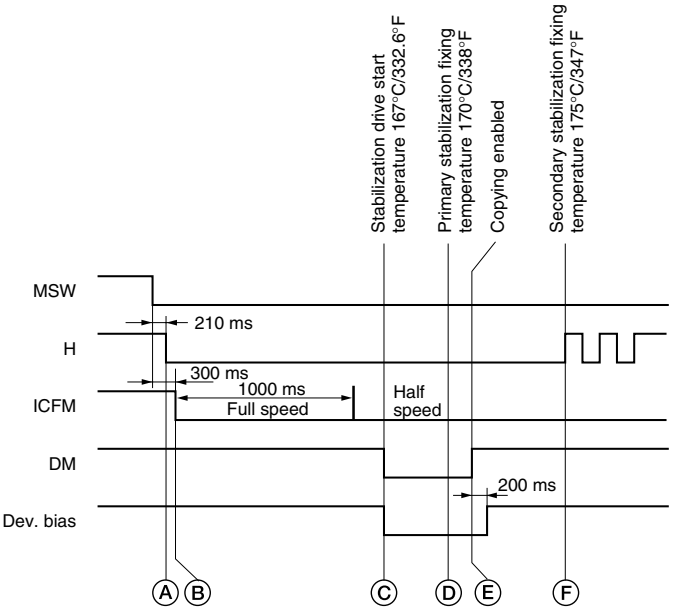


Figure 1-3-37 Heating the heat roller and detecting temperature

① Heat roller
② Fixing heater (H)
③ Fixing unit thermostat 1 (TH1)
④ Fixing unit thermostat 2 (TH2)
⑤ Fixing unit thermistor (FTH)
⑥ Fixing unit blade

The heat roller is heated by the fixing heater (H) inside it; its surface temperature is detected by the fixing unit thermistor (FTH) and is regulated by the fixing heater turning on and off. If the fixing section becomes abnormally hot, either the fixing unit thermistor detects it or fixing unit thermostat 1 or 2 (TH1 or TH2) operates, in each case shutting the power to the fixing heater off.

Fixing temperature control



Timing chart 1-3-7 Fixing temperature control

Ⓐ 210 ms after the main switch (MSW) has been turned on, the fixing heater (H) turns on to heat the heat roller.

Ⓑ 300 ms after the main switch (MSW) has been turned on, the internal cooling fan motor (ICFM) rotates at full speed for 1000 ms and then at half speed.

Ⓒ In low temperature mode, when the fixing temperature reaches 167°C/332.6°F, the drive motor (DM) and developing bias turn on to start stabilization drive control.

Ⓓ When the fixing temperature reaches 170°C/338°F, primary stabilization is achieved. Copying is enabled if the time from the main switch (MSW) being turned on has reached the following:

1 s if the fixing temperature was 100°C/212°F or above when the main switch was turned on;

43 s if the fixing temperature was between 13°C/55.4°F and 99°C/210.2°F and the external temperature was 18°C/64.4°F or above when the main switch was turned on; or

69 s in low temperature mode (the external temperature is below 20°C/68°F).

Ⓔ When copying is enabled in low temperature mode, the drive motor (DM) turns off and, after 200 ms, the developing bias turns off to end stabilization drive control.

Ⓕ When the fixing temperature reaches 175°C/347°F, secondary stabilization is achieved, and the fixing heater (H) is turned on and off as required to keep the fixing temperature at 175°C/347°F.

• Fixing temperature control in environmental mode

The fixing control temperature is changed as follows during environmental mode or depending on the status of the copier.

• Environmental mode
  1. Low temperature mode: The external temperature is below 20°C/68°F.
  2. Normal temperature mode: The external temperature is 20°C/68°F or above.
• Copier's status
  1. Standby
  2. Start of copying: from the start of copying to the 10th copy count
  3. During copying: 11th copy count and after

Table 1-3-3 Fixing control temperature

		Copier's status		
		Standby	Start of copying	Copying
Environmental mode	Low temp.	185°C/356°F	190°C/383°F	185°C/356°F
	Normal temp.	175°C/347°F	175°C/347°F	175°C/347°F

• Fixing temperature control in preheat/energy saving mode

During preheat/energy saving mode, the fixing heater (H) is turned on and off to keep the fixing temperature at 100°C/212°F. Operation after the preheat/energy saving mode is exited depends on the temperature mode. If the copier is in normal temperature mode, copying is enabled when the fixing temperature reaches 170°C/338°F without performing stabilization drive control. In low temperature mode, stabilization drive control takes place and copying is enabled when the fixing temperature reaches 185°C/356°F. The fixing control temperature during preheat/energy saving mode can be changed in simulation 47.

Paper separation

Paper is separated in the fixing section by the separation claws as shown in Figure 1-3-38.

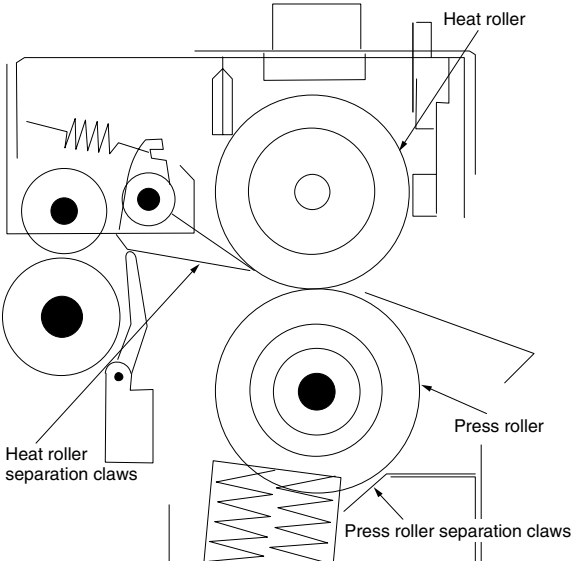


Figure 1-3-38 Paper separation

II

ELECTRICAL SECTION

CONTENTS

2-1 Electrical Parts Layout

2-1-1 Electrical parts layout 2-1-1

2-1-1 Electrical parts layout

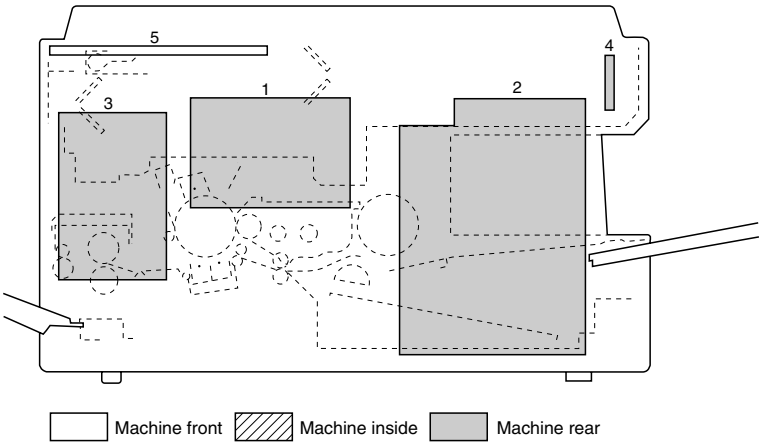


Figure 2-1-1 Layout of electrical parts: PCBs

1. Main PCB (MPCB) ..... Controls the other PCBs and electrical components.
2. Composite PCB (CPCB) ..... Contains safety switch 1 and noise filter; generates 24 V and 5 V DC; and controls the halogen lamp and fixing heater.
3. High-voltage transformer PCB (HVTPCB) ..... Performs main charging; generates developing bias and high voltage for transfer and separation charging.
4. Humidity sensor PCB (HUMPCB) ..... Detects absolute humidity.
5. Operation unit PCB (OPCB) ..... Consists of operation keys and display LEDs.

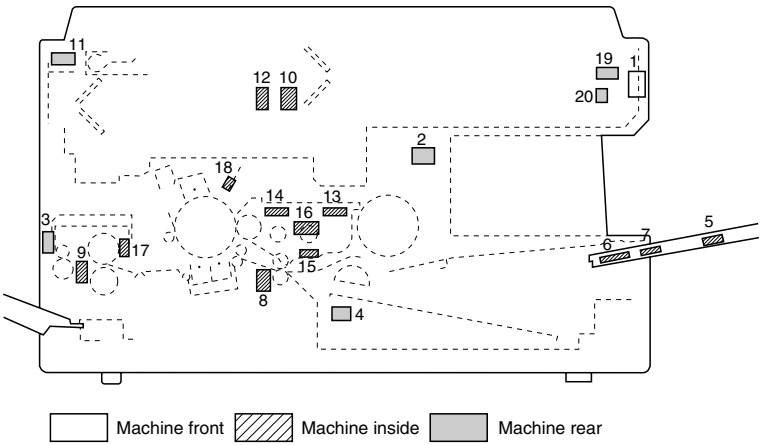


Figure 2-1-2 Layout of electrical parts: switches and sensors

1. Main switch (MSW) ..... Turns the AC power on and off.
2. Safety switch 1 (SSW1) ..... Breaks the safety circuit when the front cover is opened, and resets paper jam detection.
3. Safety switch 2 (SSW2) ..... Breaks the safety circuit when the eject cover is opened, and resets paper jam detection.
4. Drawer switch (CASDSW) ..... Detects the presence or absence of the paper drawer.
5. Bypass paper length switch (BYPPLSW) ..... Detects the length of paper on the bypass table.
6. Bypass paper width switch (BYPPWSW) ..... Detects the width of paper on the bypass table.
7. Bypass table extended detection switch (BYPEDSW) ..... Detects when the bypass table is extended to use long paper.
8. Registration switch (RSW) ..... Controls the secondary paper feed start timing.
9. Eject switch (ESW) ..... Detects a paper jam in the fixing section.
10. AE sensor (AES) ..... Detects the original density.
11. Home position switch (HPSW) ..... Detects the scanner in the home position.
12. Lens home position switch (LHPSW) ..... Detects the lens in the home position.
13. Toner cartridge detection switch 1 (TCDSW1) ..... Detects the presence or absence of the toner cartridge.

14. Toner cartridge detection switch 2 (TCDSW2) ..... Detects the presence or absence of the toner cartridge.
15. Toner sensor (TNS) ..... Detects the toner density in the developing unit.
16. Toner level sensor (TLDS) ..... Detects the toner level in the toner hopper.
17. Fixing unit thermistor (FTH) ..... Detects the heat roller temperature.
18. Drum thermistor (DTH) ..... Detects the drum section temperature.
19. Humidity sensor (HUMSENS) ..... Detects the external humidity.
20. External temperature thermistor (ETTH) ..... Detects the external temperature.

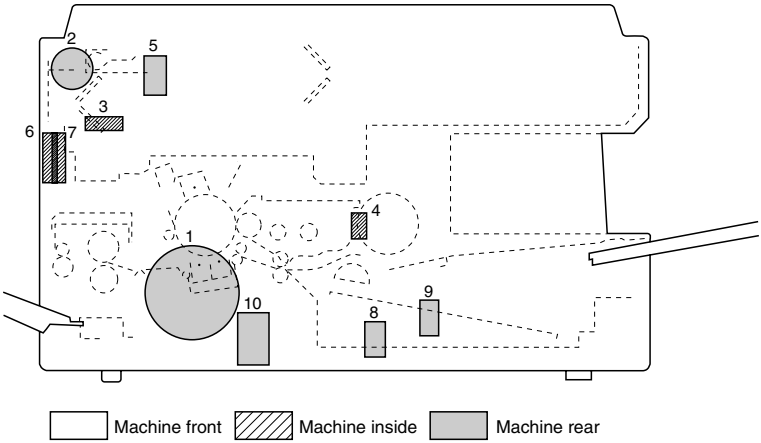


Figure 2-1-3 Layout of electrical parts: motors and solenoids

1. Drive motor (DM) ..... Drives the machine.
2. Scanner motor (SM) ..... Drives the optical system.
3. Lens motor (LM) ..... Drives the lens and mirrors 4 & 5.
4. Toner feed motor (TFM) ..... Replenishes toner.
5. Optical section fan motor (OPFM) ..... Cools the optical section.
6. Internal cooling fan motor (ICFM) ..... Cools the machine interior.
7. Ozone exhaust fan motor (OEFM) ..... Exhausts ozone.
8. Paper feed solenoid (PFSOL) ..... Primary paper feed from the paper drawer.
9. Bypass solenoid (BYPSOL) ..... Performs primary paper feed from the bypass table, and operates the bypass lift.
10. Registration solenoid (RSOL) ..... Operates the registration stopper.

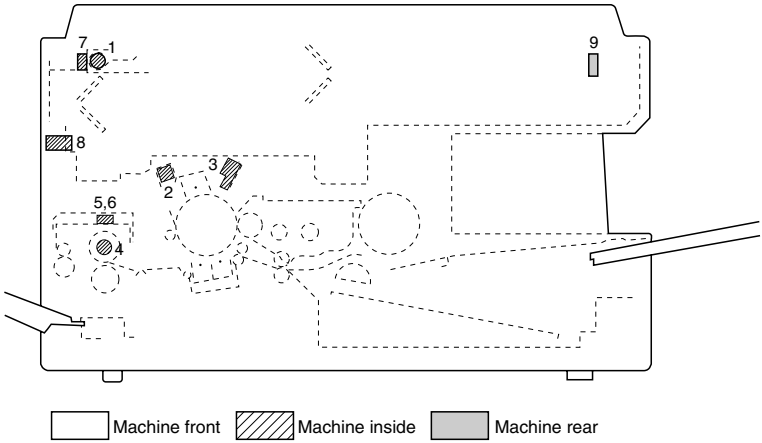


Figure 2-1-4 Layout of electrical parts: other electrical parts

1. Halogen lamp (HL) ..... Performs exposure.
2. Cleaning lamp (CL) ..... Removes residual charge from the drum surface.
3. Blank lamps (BL) ..... Remove charge from non-image forming areas of the drum surface.
4. Fixing heater (H) ..... Heats the heat roller.
5. Fixing unit thermostat 1 (TH1) ..... Prevents overheating in the fixing section.
6. Fixing unit thermostat 2 (TH2) ..... Prevents overheating in the fixing section.
7. Optical section thermostat (TH3) ..... Prevents overheating in the optical system.
8. Total counter (TC) ..... Displays the total number of copies produced.
9. *Solid state relay (SSR) ..... Controls the fixing heater.

* For 230 V specifications only.

CONTENTS

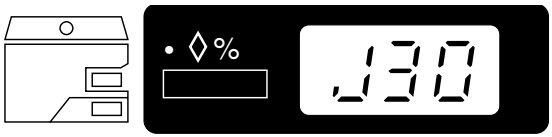
2-2 Detection of Paper Misfeed

2-2-1 Paper misfeed detection 2-2-1
2-2-2 Paper misfeed detection conditions 2-2-2

2-2-1 Paper misfeed detection

When a paper jam occurs, the copier immediately stops copying and the copy quantity/ magnification display on the operation unit shows PF, J30, J40 or J50 indicating the location of the jam.
Paper jam counts sorted by the detecting conditions can be checked by jam code in simulation 74.
To remove paper jammed in the copier, open the drawer, open the front cover and operate the paper conveying section lever, open the eject cover, or open the eject cover and detach the fixing unit guide.
To reset the paper misfeed detection, open and close the front or eject cover to turn safety switch 1 or 2 off and on.

Metric



Inch

PF: no paper feed (or, no paper present in the drawer)
J30: paper jam in the registration section
J40: paper jam in the paper conveying or fixing section
J50: paper jam in the eject section

Figure 2-2-1 Misfeed location indication

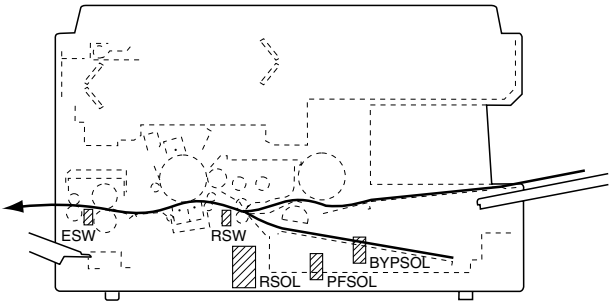
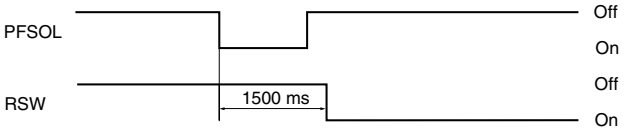


Figure 2-2-2 Misfeed detection

2-2-2 Paper misfeed detection conditions

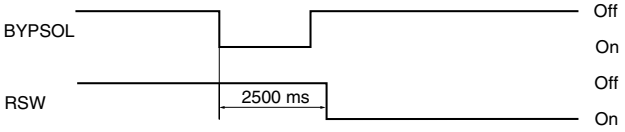
No paper feed (PF)

- The registration switch (RSW) does not turn on within 1500 ms after the paper feed solenoid (PFSOL) has turned on during drawer paper feed.



Timing chart 2-2-1

- The registration switch (RSW) does not turn on within 2500 ms after the bypass solenoid (BYPSOL) has turned on during bypass paper feed.

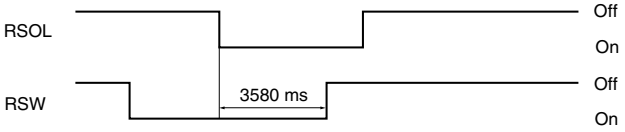


Timing chart 2-2-2

Paper jam in the registration section (J30)

- The registration switch (RSW) is on when the main switch is turned on or when the front or eject cover is closed.

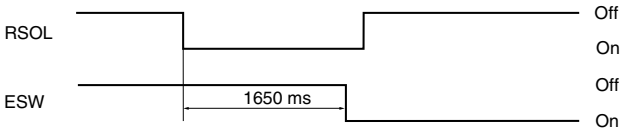
- The registration switch (RSW) does not turn off within 3580 ms after the registration solenoid (RSOL) has turned on.



Timing chart 2-2-3

Paper jam in the paper conveying or fixing section (J40)

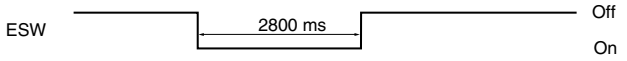
- The eject switch (ESW) does not turn on within 1650 ms after the registration solenoid (RSOL) has turned on [except for the 1200 ms from the registration switch (RSW) turning off when the drive does not stop].



Timing chart 2-2-4

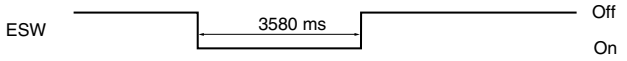
Paper jam in the eject section (J50)

- When the eject switch (ESW) is on when the main switch is turned on or when the front or eject cover is closed, a forced-ejection is performed; the eject switch (ESW) does not turn off within 2800 ms.



Timing chart 2-2-5

- The eject switch (ESW) does not turn off within 3580 ms after the eject switch (ESW) has turned on.



Timing chart 2-2-6

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(2) Toner feed motor drive circuit 2-3-5
(3) Scanner motor drive circuit 2-3-6
(4) Reset circuit 2-3-7
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2-3-1 Composite PCB

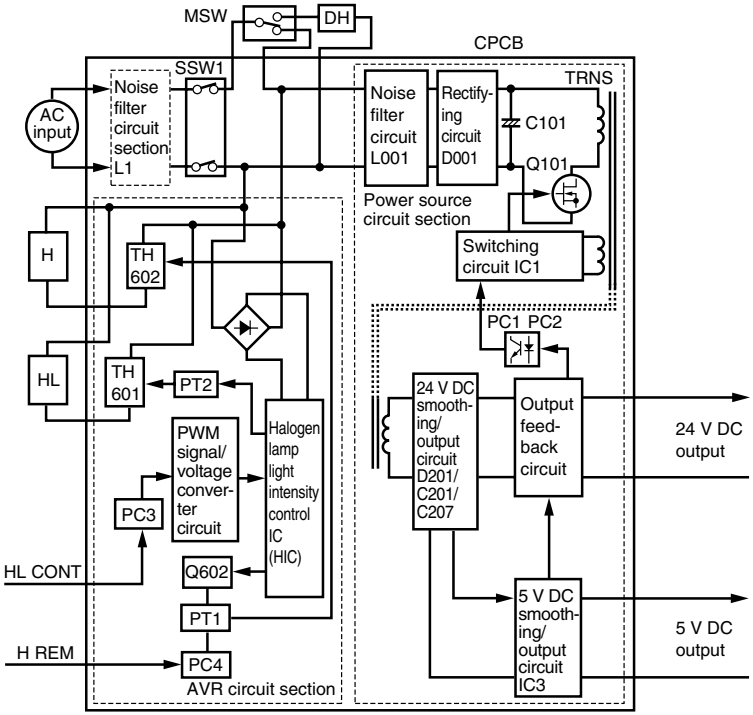

Figure 2-3-1 Composite PCB block diagram

The composite PCB (CPCB) consists of three circuit sections: noise filter, power source and AVR.

• Noise filter circuit section
The noise filter circuit consists of choke coil L1, a resistor and capacitor. These attenuate external noise and prevent noise generated by the composite PCB (CPCB) and other electrical components from escaping out of the copier via the AC line.

• Power source circuit section
The power source circuit section is a switching regulator which converts the AC input into 5 V and 24 V DC outputs. This section consists of the noise filter circuit, rectifying circuit, switching circuit, 24 V DC smoothing/output circuit, 5 V DC smoothing/output circuit and output feedback circuit.
The noise filter circuit consists of choke coil L001 and a capacitor. Any external noise that has passed through the preceding noise filter circuit section is attenuated here, while the switching noise generated in this section is prevented from escaping out via the AC line. The AC input is full-wave rectified by diode bridge D001 and then smoothed by smoothing

capacitor C101 in the rectifying circuit. The switching circuit turns FET Q101 on and off via switching control IC1, turning current to the primary coil of switching transformer TRNS on and off. The 24 V DC smoothing/output circuit converts the current induced in the secondary coil of TRNS into a stable 24 V DC output via diode D201 and smoothing capacitors C201 and C207. The 5 V DC smoothing/output circuit converts the 24 V DC output from the 24 V DC smoothing/output circuit into a stable 5 V DC using regulator IC3. Switching control IC1 regulates the 24 V DC supply by controlling the switching operation of FET Q101 depending on the signal fed back by the output feedback circuit via photocoupler PC1. If an overvoltage occurs on the 24 V or 5 V DC output, the output feedback circuit sends that information to switching control IC1 via photocoupler PC2, inhibiting IC1.

• AVR circuit section

The AVR circuit section consists of the PWM signal/voltage converter circuit, a halogen lamp control subsection with the halogen lamp light intensity control IC (HIC), and a switching subsection with thyristors TH601 and TH602 that turn the fixing heater (H) and halogen lamp (HL) on and off.

Control signal H REM from the main PCB turns photocoupler PC4 on when low. This allows current to flow from transistor Q602 to photocoupler PT1, turning PT1 on, which applies a trigger voltage to the gate of thyristor TH602, causing it to conduct and allow current to flow to fixing heater (H) to turn it on. Transistor Q602 is turned on by the zero-crossing signal from the halogen lamp light intensity control IC (HIC), so thyristor TH602 conducts and the current flows to the fixing heater every time 0 V is crossed.

The halogen lamp light intensity is controlled by control signal HL CONT from the main PCB. HL CONT is a PWM signal turned on and off at a duty ratio set by the halogen lamp light intensity data. This signal is converted into a voltage by the PWM signal/voltage converter circuit and is output to the halogen lamp light intensity control IC (HIC). This adjusts the phase of the photocoupler PT2 on-timing based on the halogen lamp light intensity data converted into a voltage, using an internal zero-crossing signal as a reference. When photocoupler PT2 is turned on, a trigger voltage is applied to the gate of thyristor TH601, changing the time that TH601 conducts. This changes the level of the voltage applied to the halogen lamp terminals, so regulating the halogen lamp light intensity.

2-3-2 Main PCB

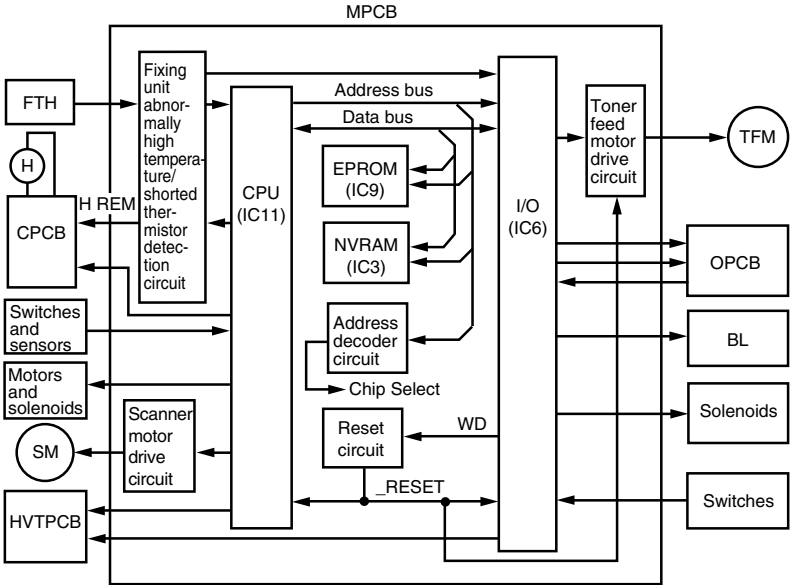

Figure 2-3-2 Main PCB block diagram

The main PCB (MPCB) consists of the CPU (IC11), EPROM (IC9), NVRAM (IC3) and I/O (IC6) as major components.
Based on the control programs in EPROM (IC9) and the data in NVRAM (IC3), the CPU (IC11) controls the overall copier system by exchanging input and output signals with the components connected to it directly or indirectly through I/O (IC6) via the address bus, data bus and other control signals.
Other circuitry components of the main PCB are the fixing unit abnormally high temperature/ shorted thermistor detection circuit, toner feed motor drive circuit, scanner motor drive circuit and reset circuit.

(1) Fixing unit abnormally high temperature/shorted thermistor detection circuit

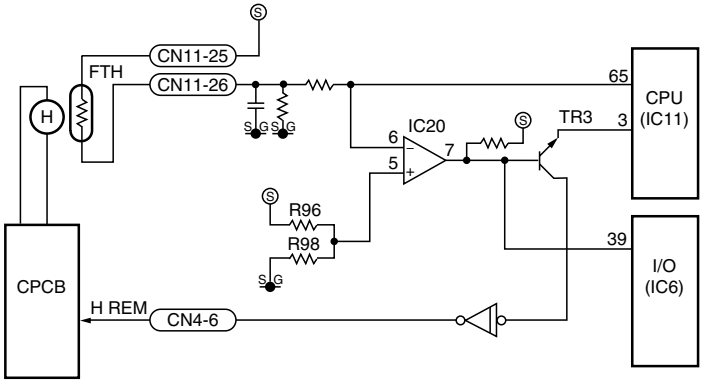

Figure 2-3-3 Fixing unit abnormally high temperature/shorted thermistor detection circuit

The fixing unit abnormally high temperature/shorted thermistor detection circuit forces the fixing heater control signal H REM off if the fixing temperature reaches an abnormally high level. This hardware safety function backs up the software-controlled shorted fixing unit thermistor/abnormally high temperature detection feature (self-diagnostic code C64).
As the fixing temperature rises, the resistance of the fixing unit thermistor (FTH) decreases. This increases the voltage at pin 6 of comparator IC20. When the voltage exceeds the abnormality detection level set by resistors R96 and R98 at pin 5 of comparator IC20, the output at pin 7 goes low, turning transistor TR3 off; this shuts off the fixing heater control signal H REM output from pin 3 of the CPU (IC11), forcing off the fixing heater (H) controlled via the composite PCB (CPCB).

(2) Toner feed motor drive circuit

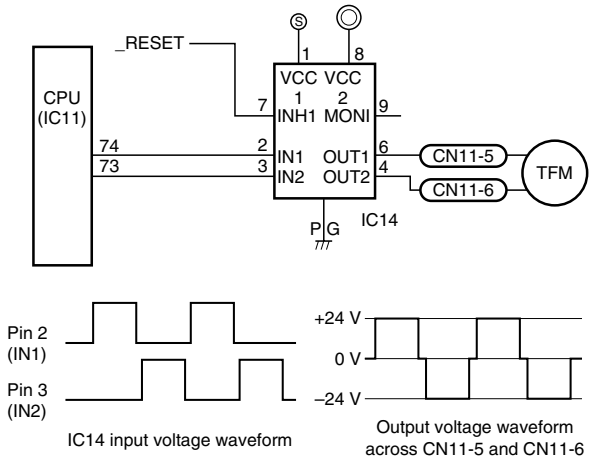

Figure 2-3-4 Toner feed motor drive circuit

The toner feed motor drive circuit generates a pseudo-AC supply to run the toner feed motor (TFM), an AC motor.
Pulse signals output from the CPU (IC11) to pins 2 and 3 of driver IC14 alternate the polarities of the 24 V DC in the transistor H-bridge circuit incorporated in driver IC14. This voltage is output across CN11-5 and CN11-6 as a pseudo-AC supply.

(3) Scanner motor drive circuit

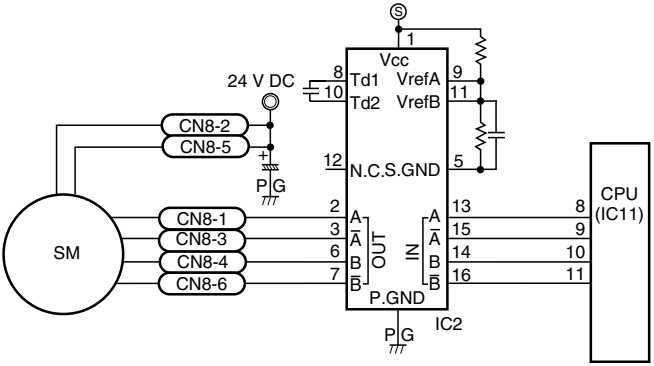

Figure 2-3-5 Scanner motor drive circuit

The scanner motor drive circuit controls the scanner motor (SM), a stepping motor. Driver IC2 turns the output current to the scanner motor coil on and off depending on the pulse signal from the main PCB.

(4) Reset circuit

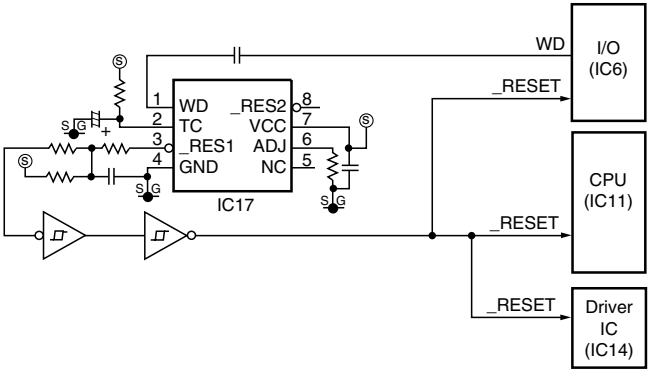

Figure 2-3-6 Reset circuit

Whenever there is a drop in the 5 V DC and until the 5 V DC supply stabilizes when the power is turned on, reset IC17 emits a reset signal to the CPU (IC11) to prevent IC11 from behaving erroneously.
Reset IC17 is equipped with a watchdog timer function to monitor the CPU (IC11). I/O IC6 emits a constant watchdog pulse signal (WD) to pin 1 of reset IC17. When this pulse signal fails to be applied regularly, a problem with the CPU (IC11) is assumed and a reset signal is output to reset the CPU. The reset signal is also applied to driver IC14.

2-3-3 Operation unit PCB

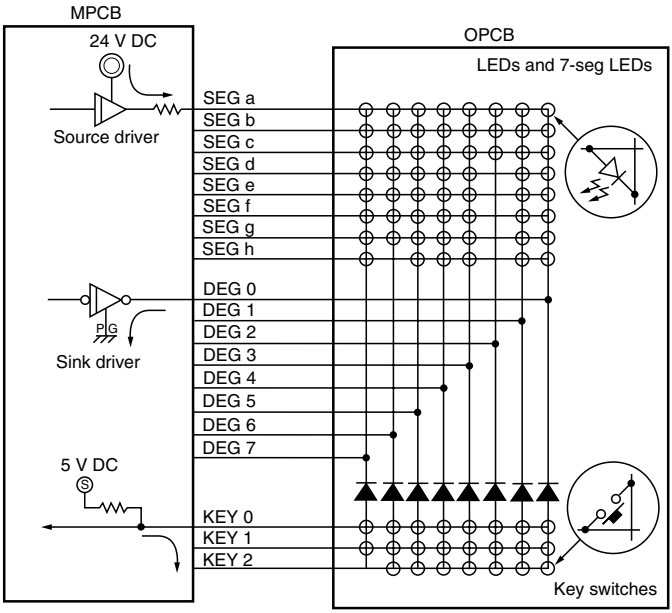

Figure 2-3-7 Operation unit PCB block diagram

The operation unit PCB (OPCB) consists of LEDs, 7-segment LEDs and key switches arranged in matrix.
To light an LED or 7-segment LED, the main PCB (MPCB) turns on one of the source drivers for lines SEG a to SEG h to allow current to the line on which the LED or 7-segment LED to be lit is present. Scan signals which go low in sequence are constantly output to the sink drivers for lines DEG 0 to DEG 7, so current flows through the LED for which the two signals are low simultaneously.
The status of key switches is detected by return signals KEY 0 to KEY 2. When none of the keys on the operation panel is pressed, each line of return signals KEY 0 to KEY 2 is pulled high to 5 V DC by the main PCB (MPCB). The main PCB (MPCB) outputs scan signals that go low in sequence to the sink drivers for lines DEG 0 to DEG 7, so, when a key is pressed, the key switch conducts and the return signal goes low due to the scan signal. The main PCB (MPCB) identifies the specific key by the location of the cross point where the line emitting the scan signal and the line with the low return signal meet.

III

SET UP AND ADJUSTMENT SECTION

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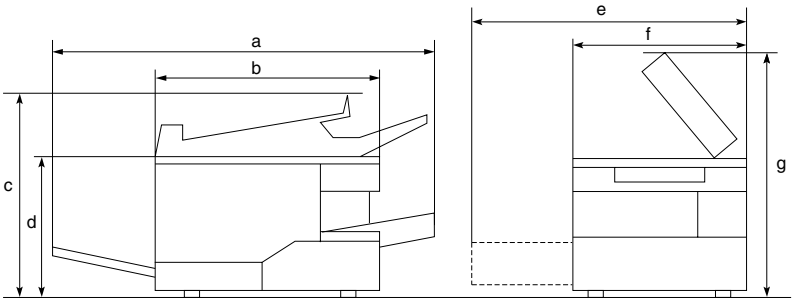
3-1-4 Installing the dehumidifier (service part) 3-1-19

3-1-1 Unpacking and installation

(1) Installation environment

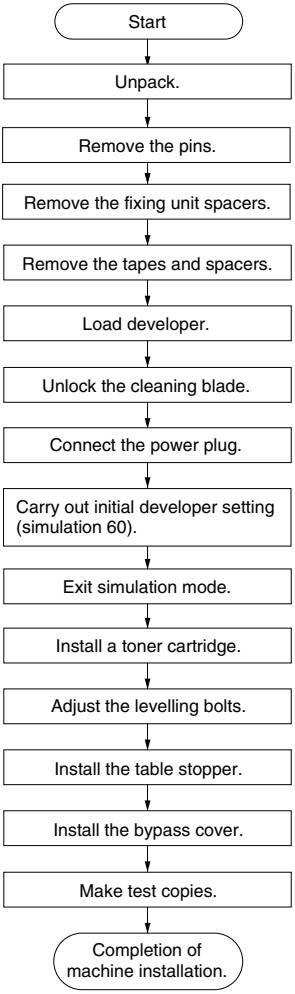
1. Temperature: 10 – 35°C/50 – 95°F
2. Humidity: 15 – 85%RH
3. Power supply: 220 – 240 V AC, 6.3 A
4. Power source frequency: 50/60 Hz ± 0.3%
5. Installation location
   - Avoid direct sunlight or bright lighting. Make sure that the photoconductor will not be exposed to direct sunlight or other strong light when removing paper jams.
   - Avoid extremes of temperature and humidity, abrupt ambient temperature changes, and hot or cold air directly hitting the machine.
   - Avoid dust and vibration.
   - Choose a surface capable of supporting the weight of the machine.
   - Place the machine on a level surface (maximum allowable inclination: 1°).
   - Avoid air-borne substances that may adversely affect the machine or degrade the photoconductor, such as mercury, acidic and alkaline vapors, inorganic gases, NO_x, SO_x gases and chlorine-based organic solvents.
   - Select a room with good ventilation.
6. Allow sufficient access for proper operation and maintenance of the machine.
   Machine front: 1000 mm/39 3/8" Machine rear: 100 mm/4"
   Machine right: 700 mm/27 5/8" Machine left: 600 mm/23 5/8"



a: 1130 mm/44 1/8" e: 980 mm/38 9/16"
b: 595 mm/23 7/16" f: 590 mm/23 1/4"
c: 485 mm/19 1/8" g: 894 mm/35 3/16"
d: 338 mm/13 5/16"

Figure 3-1-1 Installation dimensions

(2) Installation procedure



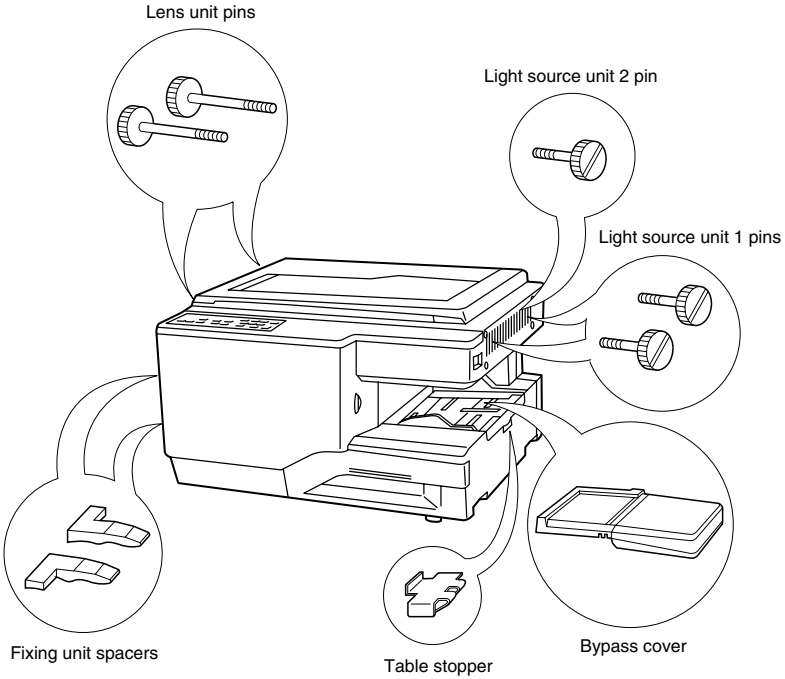

Lens unit pins
Light source unit 2 pin
Light source unit 1 pins
Fixing unit spacers
Table stopper
Bypass cover

Figure 3-1-2

Unpack.

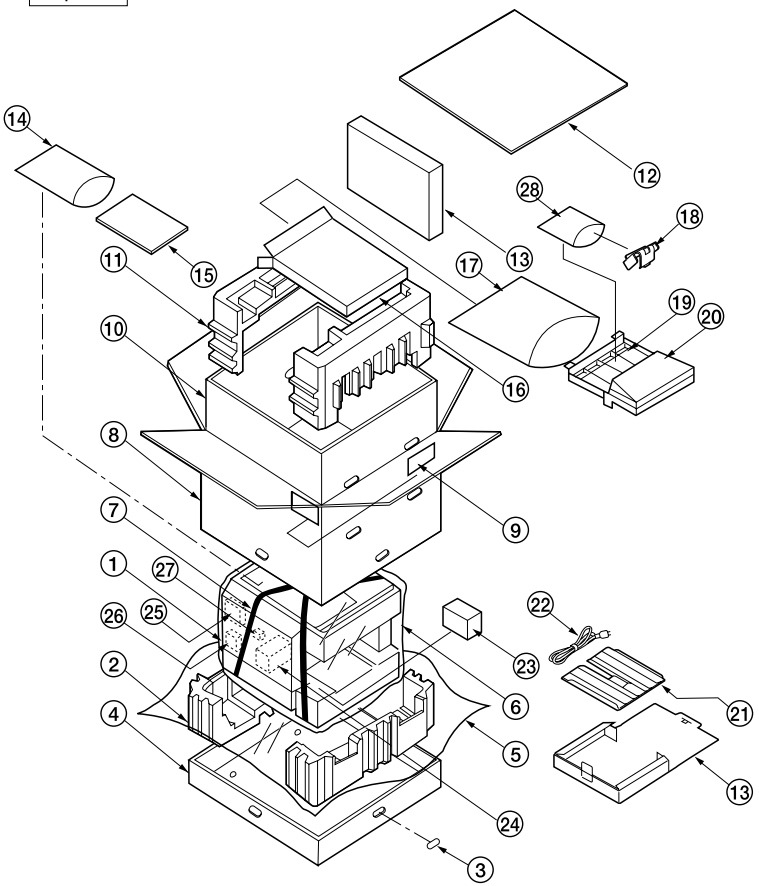


Figure 3-1-3 Unpacking

① Copier
② Bottom pads
③ Hinge joints
④ Skid
⑤ Machine bottom cover
⑥ Machine cover
⑦ Slings
⑧ Outer case
⑨ Bar code labels
⑩ Inner frame
⑪ Top pads
⑫ Top plate
⑬ Accessories case
⑭ Plastic bag
⑮ Instruction handbook
⑯ Bypass cover case
⑰ Air-padded sheet
⑱ Table stopper
⑲ Upper part of the bypass cover
⑳ Lower part of the bypass cover
㉑ Copy tray
㉒ Power cord
㉓ Right spacer
㉔ Inner spacer
㉕ Upper hinge spacer
㉖ Lower hinge spacer
㉗ Image formation unit spacer
㉘ Plastic bag

Remove the pins.

1. Remove the tapes holding the two light source unit 1 pins and the one light source unit 2 pin on the upper right cover, and then remove these pins.

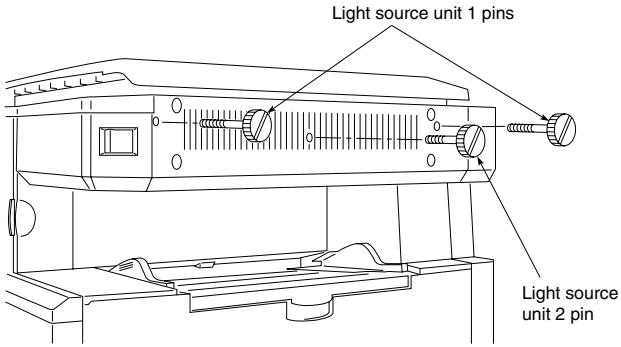


Figure 3-1-4

2. Remove the tapes holding the two lens unit pins on the left cover and then remove the pins.

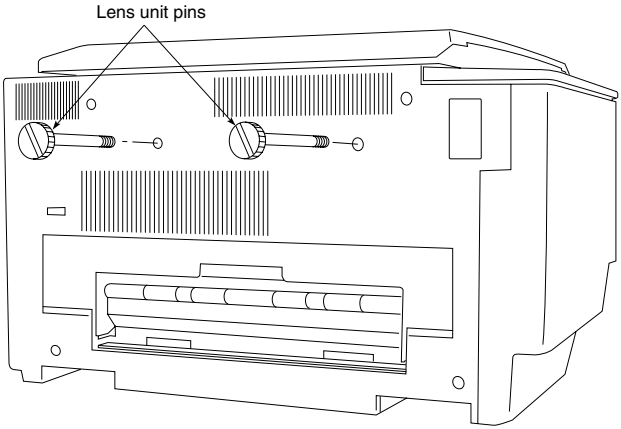


Figure 3-1-5

Remove the fixing unit spacers.

1. Open the eject cover and remove the two fixing unit spacers holding both ends of the press roller.

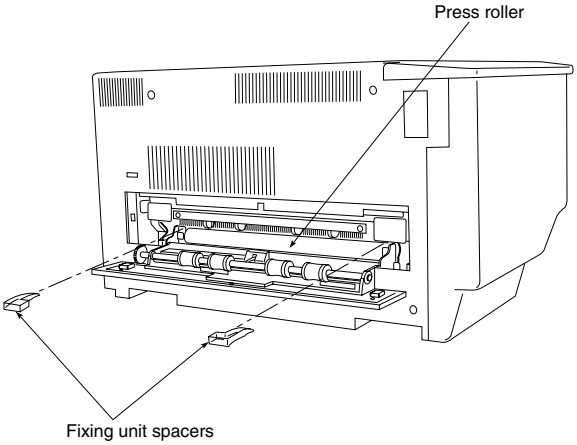


Figure 3-1-6

2. Close the eject cover.

Remove the tapes and spacers.

1. Detach the original holder and remove the paper from the contact glass.
2. Remove the tape on the top rear of the machine.
3. Refit the original holder.
4. Remove the tapes holding the insertion guides of the bypass table.
5. Remove the tape and right spacer.

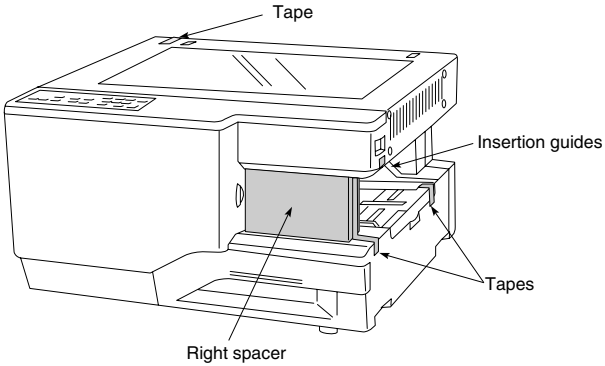


Figure 3-1-7

6. Open the front cover and remove the tapes and the four spacers.
   Remove the tape holding the cleaner tab.

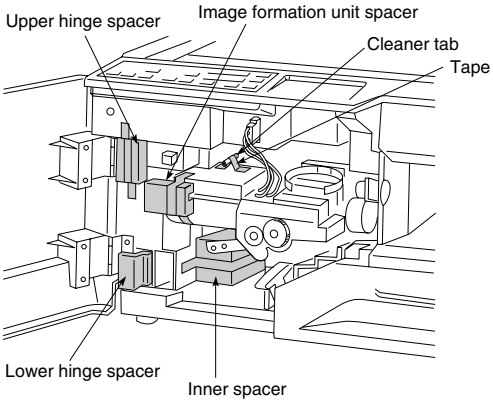


Figure 3-1-8

7. Remove the 12-pin plug of the image formation unit.
8. Remove the tape and turn the paper conveying section lever down.

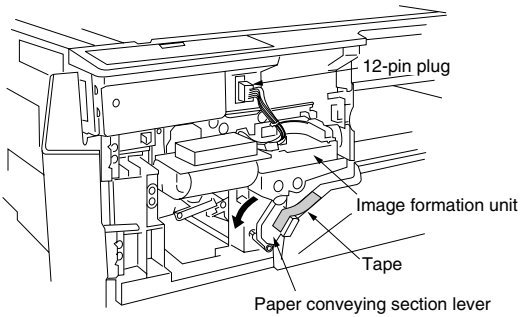


Figure 3-1-9

9. Slide the image formation unit lever toward the left and, holding the front part of the unit and the unit's handle, pull the unit level out of the machine.
   • Do not touch the drum separation claws when holding the image formation unit.

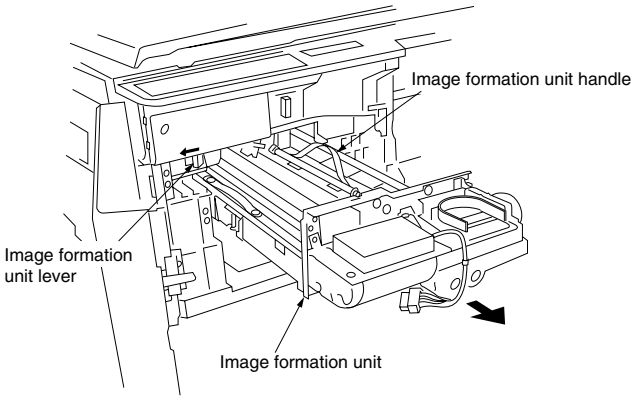


Figure 3-1-10 Removing the image formation unit

10. Remove the tape holding the fixing unit front guide inside the machine.

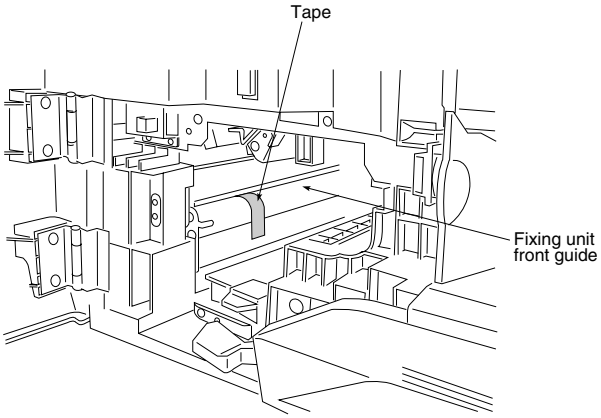


Figure 3-1-11

Load developer.

Caution: Place the image formation unit on a level surface when loading developer.

1. Slide the developing unit top lid toward the machine front off the image formation unit.

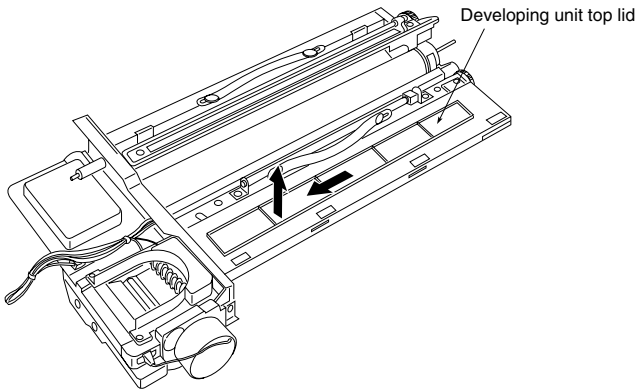


Figure 3-1-12 Removing the developing unit top lid

2. Shake the developer bottle well.
3. Pour developer into the developing unit so that it covers the entire developing roller uniformly.

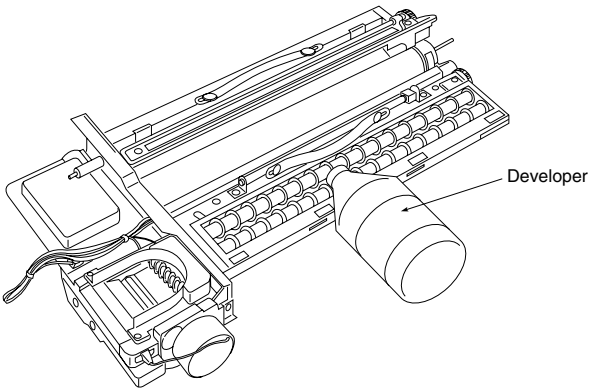


Figure 3-1-13 Loading developer

4. Refit the developing unit top lid to the image formation unit.

Unlock the cleaning blade.

1. Push up the blade mount on the left of the image formation unit and slide the blade lever toward the machine front. The cleaning blade is unlocked and comes into contact with the drum.

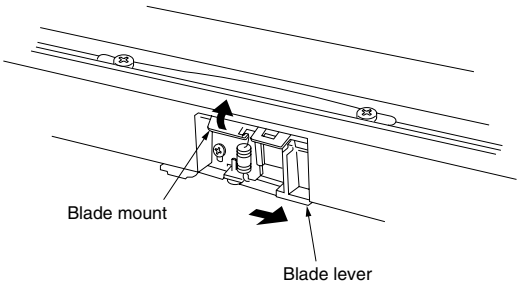


Figure 3-1-14 Unlocking the cleaning blade

2. Place the image formation unit back into the machine and close the front cover.

Connect the power plug.

1. Insert the power plug into the wall outlet.

Carry out initial developer setting (simulation 60).

1. Turn the main switch on and enter 10871087 with the numeric keys to enter simulation mode.
2. Enter 60 with the numeric keys and press the print key.
3. Press the print key. After about 3 minutes, the toner sensor control voltage is automatically set and the value appears on the copy quantity display.
   Display example: 198
   - Be sure to record the set value on the simulation label.
   - Check that the copy start indicator is blinking: the indicator remains unlit if automatic setting of the toner sensor control voltage has failed.
4. Press the stop/clear key.

Exit simulation mode.

1. Enter 01 with the numeric keys and press the print key. Simulation mode is exited.

Install a toner cartridge.

1. Open the front cover.
2. Shake the new toner cartridge up and down four or five times to agitate the toner.

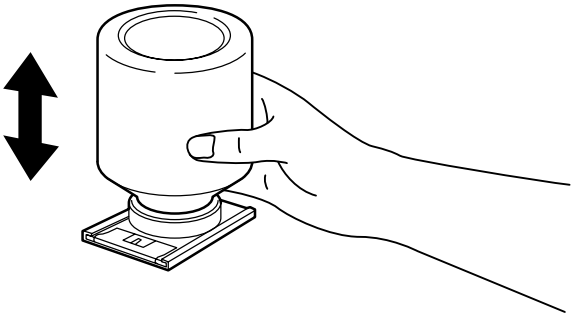


Figure 3-1-15

3. Insert the toner cartridge into the developing unit along the rails.

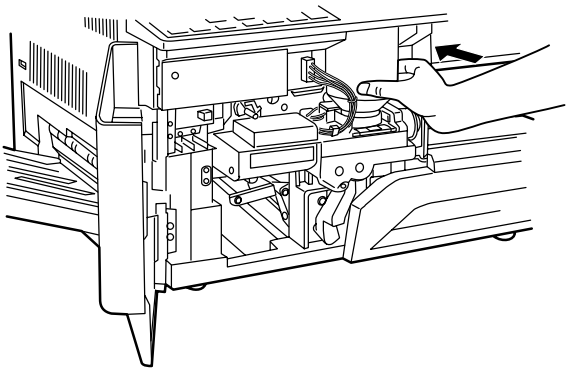


Figure 3-1-16

4. Holding the toner cartridge with hand, pull off the film.

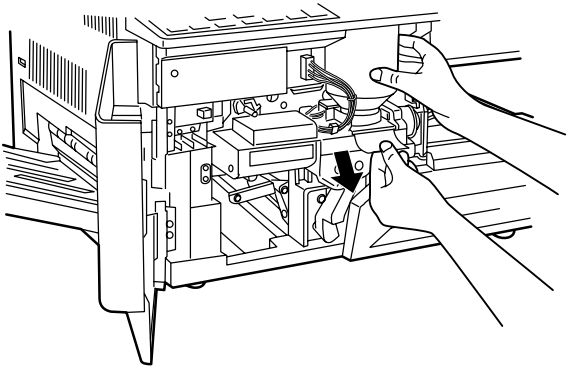


Figure 3-1-17

5. Close the front cover.

Adjust the levelling bolts.

1. Remove the tapes and turn the two levelling bolts below the right side of the machine until the machine is level.

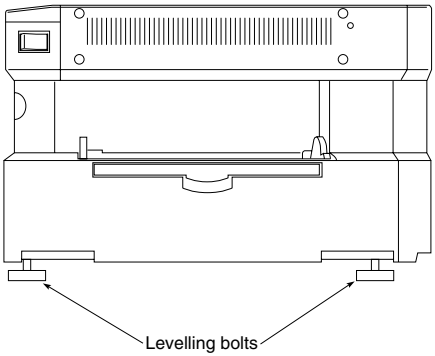


Figure 3-1-18 Adjusting the levelling bolts

Install the table stopper.

1. Pull out the bypass table.
2. Insert the table stopper under the bypass table.

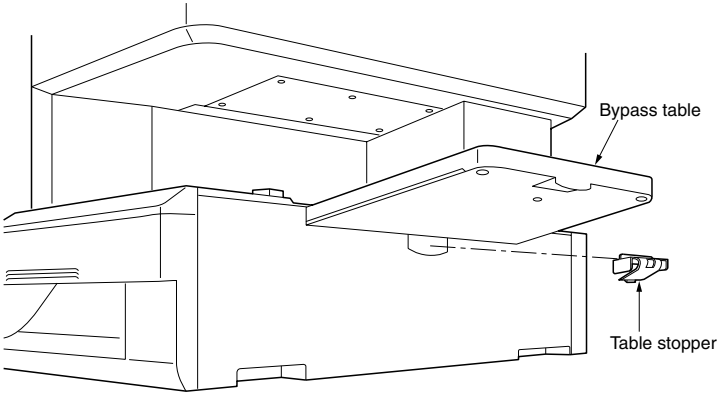


Figure 3-1-19

Install the bypass cover.

1. Fit the bypass cover to the bypass table.

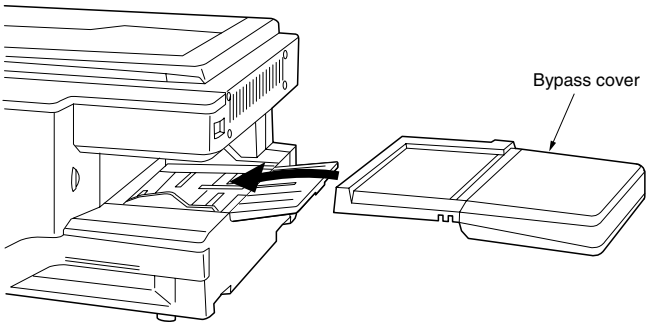


Figure 3-1-20

Make test copies.

1. Place paper in the paper drawer and make test copies.

Completion of machine installation.

3-1-2 Setting initial copy modes

Factory settings are as follows:

Sim. No.	Contents	Factory setting
80	Selecting between double/single counts	Double
81	Setting initial exposure mode	Inch: manual, Exp. 4 Metric: auto
82	Selecting between manual/auto modes	Auto
83	Selecting the exposure scale	19 steps
84	Setting the auto clear time	90 s
85	Setting the auto preheat time	15 min.
86	Setting the auto shutoff time	30 min.
89	Setting the maximum preset number of copies	100 copies
91	Setting operation under the toner empty condition No. of copies that can be made Copy mode	 Unlimited Single copies
92	Selecting between auto start on/off	On
98	Setting the optical section fan motor control	Normal
User setting	Drawer paper size setting	Inch: 11" × 8 1/2" Metric: A4

3-1-3 Installing the key counter (option)

Key counter installation requires the following part:
Key counter socket assembly (P/N 41529210)

Procedure

1. Detach the left cover.
2. Cut out the indicated area in the left cover using nippers.

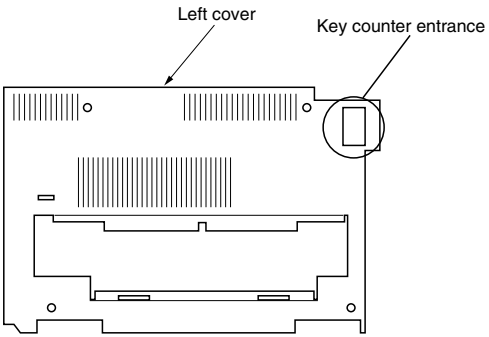


Figure 3-1-21

3. Open the front cover and take the image formation unit out of the copier.
4. Remove the upper and lower right covers, front right cover and front inner cover.
5. Remove the two screws and the plate.
6. Remove the shorting plug from the 4-pin connector on the copier.

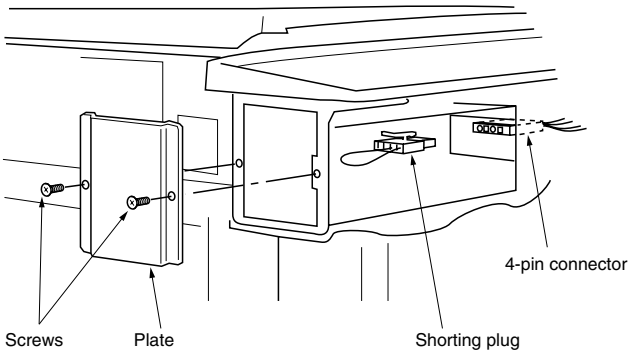


Figure 3-1-22

7. Insert the 4-pin plug of the key counter socket into the 4-pin connector on the copier.

8. Using the two screws removed in step 5, fit the key counter socket to the copier.

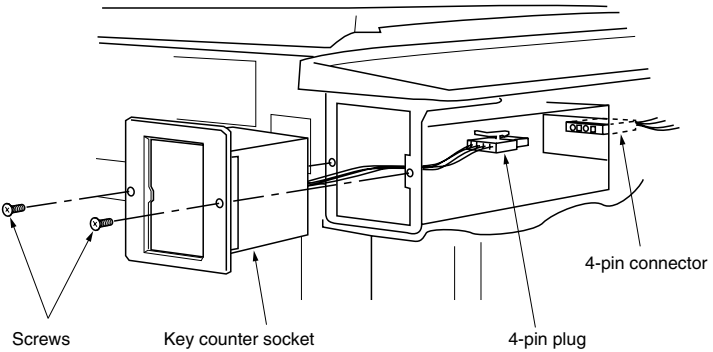


Figure 3-1-23

9. Refit the upper and lower right covers, front right cover, front inner cover and left cover.
10. Place the image formation unit back into the copier and close the front cover.
11. Turn the main switch on and insert the key counter into the socket.
12. Check that the counter counts up as copies are made.
13. Check that the copy quantity display shows U1 when the key counter is pulled out.

3-1-4 Installing the dehumidifier (service part)

Dehumidifier installation requires the following parts:
Dehumidifier assembly (P/N 66027021)
Dehumidifier junction wire (P/N 34968010)
ON label*1 (P/N 34860010)
OFF label*1 (P/N 34860020)
Two bronze binding screws M3 × 5 (P/N B1303050)
*1 Only where required by regulations.

Procedure

1. Remove the power plug from the wall outlet.
2. Remove the bypass, rear, right upper and right front covers.
3. Remove the original holder.
4. Remove the paper drawer.
5. Open the front cover and remove the image formation unit from the copier.
6. Place the copier on its left side.
7. Remove the six screws and the base center reinforcement.

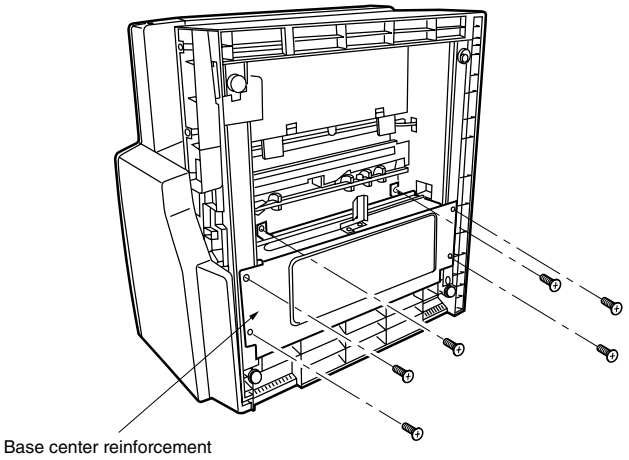


Figure 3-1-24

8. Fit the dehumidifier to the base center reinforcement with the two bronze binding screws M3 × 5.

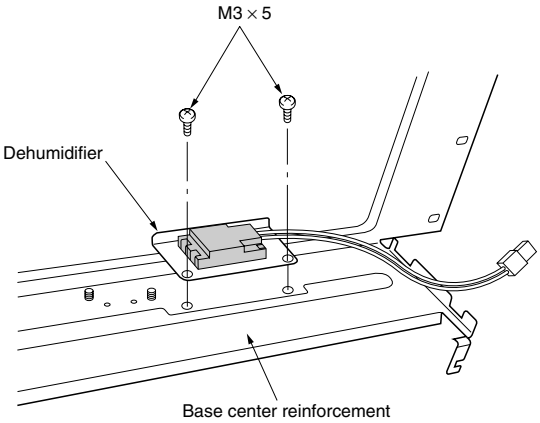


Figure 3-1-25

9. Insert the 2-pin connector of the dehumidifier into the opening at the rear of the copier and refit the base center reinforcement.

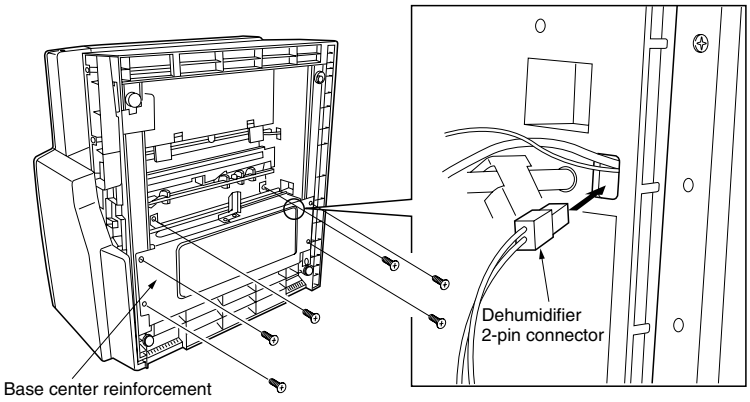


Figure 3-1-26

10. Place the copier on its base.
11. Pull the dehumidifier 2-pin connector out of the rear of the copier and connect it to the 2-pin plug of the dehumidifier junction wire.
12. Run the dehumidifier junction wire through the six wire retainers.
13. Press the white 1-pin connector of the dehumidifier junction wire onto terminal T5 on the composite PCB.
14. Press the blue 1-pin connector of the dehumidifier junction wire onto the open terminal below the main switch.

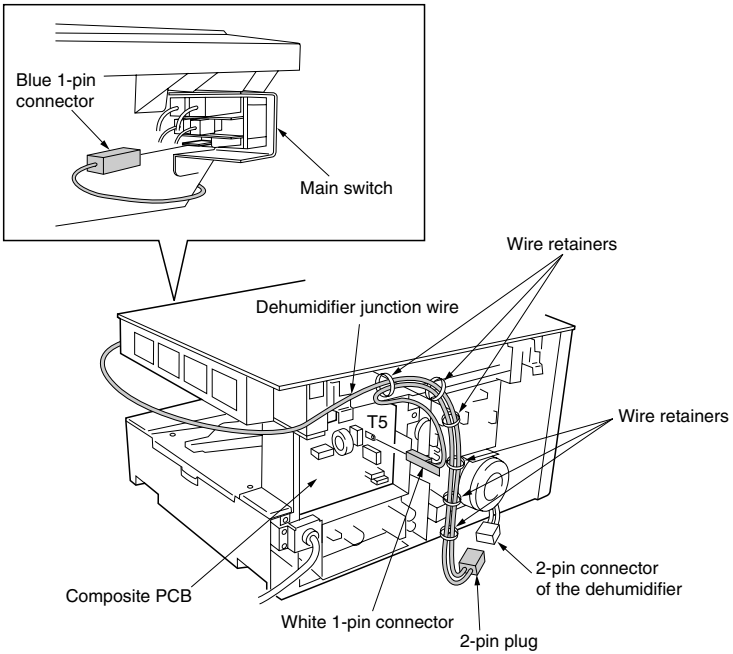


Figure 3-1-27

15. Refit the bypass, rear, right upper and right front covers.
16. Attach the ON and OFF labels above the main switch.
    Note: These labels are necessary only where required by regulations.

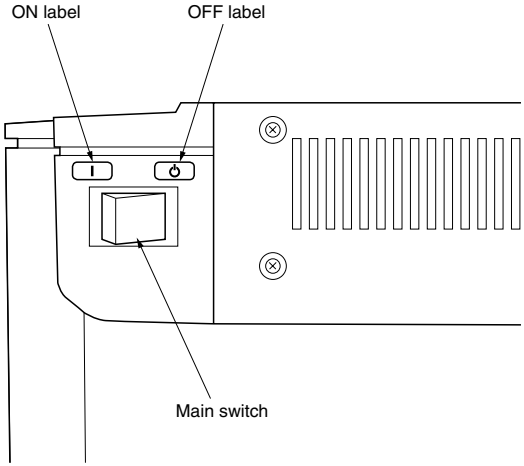


Figure 3-1-28

17. Refit all the removed parts.

CONTENTS

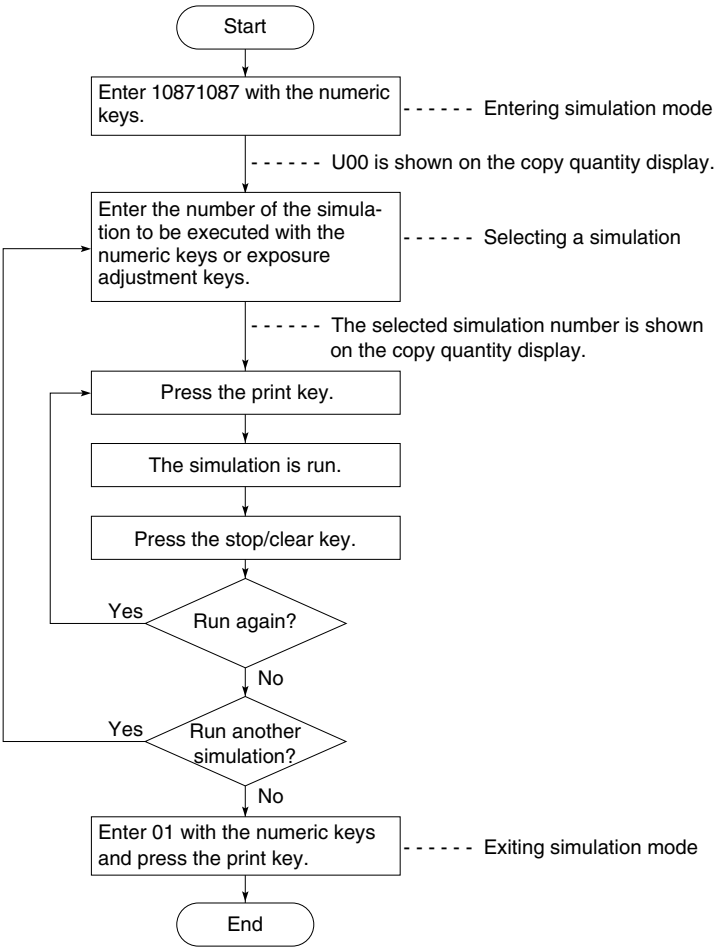
3-2 Simulation

3-2-1 Simulations 3-2-1
(1) Running a simulation 3-2-1
(2) Simulation list 3-2-3
(3) Contents of simulations 3-2-6

3-2-1 Simulations

The copier is equipped with a simulation function which can be used to check and adjust the operation of electrical components.

(1) Running a simulation


Start
Enter 10871087 with the numeric keys.
Entering simulation mode
U00 is shown on the copy quantity display.
Enter the number of the simulation to be executed with the numeric keys or exposure adjustment keys.
Selecting a simulation
The selected simulation number is shown on the copy quantity display.
Press the print key.
The simulation is run.
Press the stop/clear key.
Yes
Run again?
No
Yes
Run another simulation?
No
Enter 01 with the numeric keys and press the print key.
Exiting simulation mode
End

• Selecting a mode

Use the paper select key to select a mode during simulation. The paper size indicator corresponding to the selected mode lights up.

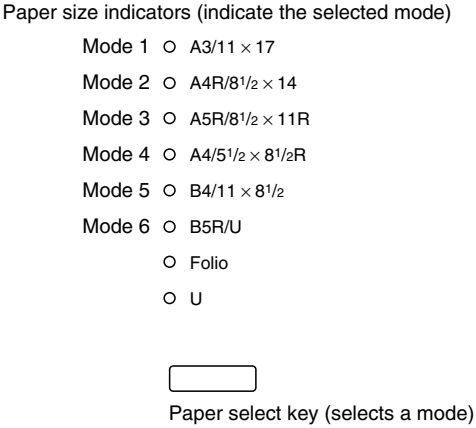

Paper size indicators (indicate the selected mode)
Mode 1 ○ A3/11 × 17
Mode 2 ○ A4R/8 1/2 × 14
Mode 3 ○ A5R/8 1/2 × 11R
Mode 4 ○ A4/5 1/2 × 8 1/2R
Mode 5 ○ B4/11 × 8 1/2
Mode 6 ○ B5R/U
○ Folio
○ U
Paper select key (selects a mode)

Figure 3-2-1

(2) Simulation list

Section	Sim. No.	Simulation contents	Default
All	01	Exiting simulation mode	———
	02	Copying without paper	———
	05	Enabling ADF operation without originals	———
	06	Checking ADF operation Numeric key: Operation 0: Feeding originals continuously 1: Feeding a single original 2: Ejecting originals	———
	09	Setting shipping defaults	———
Paper feed/ conveying	10	Turning the drive motor on	———
	11	Checking switch operation Paper size indicator: Switch name A3/11 × 17: Registration switch A4R/8 1/2 × 14: Eject switch A5R/8 1/2 × 11R: Home position switch A4/5 1/2 × 8 1/2 R: Lens home position switch B4/11 × 8 1/2: Toner level sensor	———
	12	Checking solenoid operation Mode: Solenoid 1: Bypass solenoid 2: Paper feed solenoid 3: Registration solenoid	———

Section	Sim. No.	Simulation contents	Default
Paper feed/ conveying (cont.)	14	Setting the folio size	330 mm
	16	Checking for skewed paper feed with test copies	———
	27	Adjusting leading edge registration timing	———
	52	Adjusting ADF leading edge registration timing	———
	54	Adjusting the leading edge margin	———
	55	Adjusting the side erasure	———
	59	Adjusting the trailing edge blank cut	———
Optical	20	Turning the halogen lamp on	———
	21	Checking scanning operation	———
	22	Adjusting the auto exposure reference value	———
	23	Turning the lens motor on	———
	24	Setting the exposure amount	———
	25	Adjusting lateral magnification	———
	26	Adjusting longitudinal magnification	———
	28	Setting the lens unit rank	———
	29	Adjusting exposure amount for enlargement/reduction mode	———
Charging	31	Setting transfer voltage	———
	32	Setting the drum potential	———
Cleaning	42	Making a blank lamp test copy	———
Fixing	46	Setting the fixing temperature	———
	47	Setting the fixing preheat temperature	———
Operation	50	Lighting all the indicators on the operation panel	———
Developing	60	Initializing the toner control level	———
	61	Forcing toner feed	———
	62	Adjusting the toner sensor control voltage	———
Initializing memory	70	Initializing the backup memory	———
Counts	71	Setting the maintenance cycle	40000
	72	Checking/clearing the maintenance count	Cleared
	73	Checking/clearing service call records	All cleared
	74	Checking/clearing jam counts	All cleared
	76	Checking/clearing the service call counts	All cleared
	77	Checking/clearing the paper feed counts	All cleared

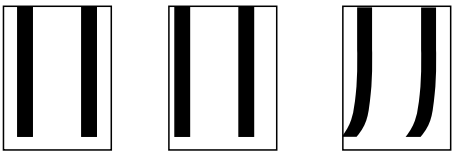
Section	Sim. No.	Simulation contents	Default
Copy modes	80	Selecting between double/single counts	Double count
	81	Setting initial exposure mode	Inch: 1 Metric: 0
	82	Selecting between manual/auto modes	0 (auto mode)
	83	Selecting the exposure scale	19 steps
	84	Setting the auto clear time	90 s
	85	Setting the auto preheat time	15 min.
	86	Setting the auto shutoff time	30 min.
	88	Setting the paper size	Folio
	89	Setting the maximum preset number of copies	100
	91	Setting operation under the toner empty condition	0 (unlimited) 0 (single copies)
	92	Selecting between auto start on/off	1 (on)
	93	Setting the destination	Inch models: 0 Metric models: 1
	98	Setting the optical section fan motor control	0 (normal control)

(3) Contents of simulations

<table>
<tr><th>Sim. No.</th><th>Description</th><th>Remarks</th></tr>
<tr><td>01</td><td>Exiting simulation mode
1. Enter 01 with the numeric keys.
2. Press the print key. The copier returns to the normal mode.</td><td></td></tr>
<tr><td>02</td><td>Copying without paper
1. Remove the connector from CN1 on the high-voltage transformer PCB.
Caution: Copying without paper with connector CN1 removed applies a small amount of toner to the drum surface, so do not run this simulation too long.
2. Enter 02 with the numeric keys.
3. Press the print key.
4. Remove all the paper from the paper drawer and bypass table.
5. Select copy modes.
6. Enter the number of copies with the numeric keys.
7. Press the print key to start copying. Copying continues until the set number of copies have been made or the stop/clear key is pressed.
8. Enter 10871087 with the numeric keys. The copier exits copying without paper mode and returns to simulation mode.</td><td>Check machine operation.</td></tr>
<tr><td>05</td><td>Enabling ADF operation without originals
1. Enter 05 with the numeric keys.
2. Press the print key. The current setting appears on the copy quantity display.
3. Change the setting with the zoom-up/down keys.
<table><tr><th>Setting</th><th>Operation</th></tr><tr><td>0</td><td>ADF normal operation</td></tr><tr><td>1</td><td>ADF operation without originals</td></tr></table>• With 1 selected, the ADF can be operated without originals independently for simulation during normal copy mode or simulation 06.</td><td></td></tr>
</table>

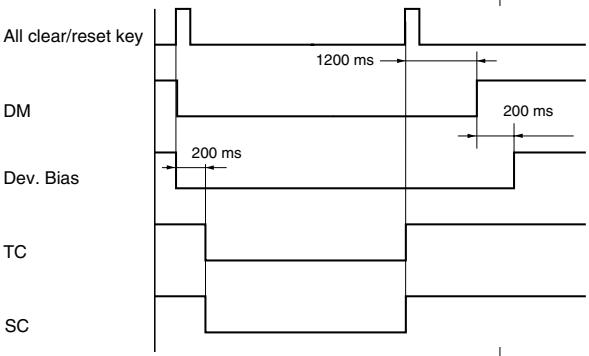
<table>
<tr><th>Sim. No.</th><th>Description</th><th>Remarks</th></tr>
<tr><td>05 (cont.)</td><td>4. Press the print key. The new setting is stored.
5. Press the stop/clear key.</td><td></td></tr>
<tr><td>06</td><td>Checking ADF operation
1. Enter 06 with the numeric keys.
2. Press the print key.
3. Press numeric key 0, 1 or 2 to start ADF operation check.
<table>
<tr><th>Numeric key</th><th>Operation</th></tr>
<tr><td>0
1
2</td><td>Feeding originals continuously
Feeding a single original
Ejecting originals</td></tr>
</table>
4. Press the stop/clear key.</td><td>Check ADF operation with or without originals.</td></tr>
<tr><td>09</td><td>Setting shipping defaults
1. Enter 09 with the numeric keys.
2. Press the print key.
3. Press the all clear/reset key. The lens in the lens unit moves to a position 752 pulses from its home position and light source unit 1 to a position 3552 pulses from its home position.
4. Turn the main switch off.</td><td>To be run before moving the machine.</td></tr>
<tr><td>10</td><td>Turning the drive motor on
1. Enter 10 with the numeric keys.
2. Press the print key. The drive motor and developing bias turn on, performing toner density control on the developer.
3. Press the stop/clear key. The operation stops.</td><td>Check the drive and paper conveying system operations.</td></tr>
</table>

<table>
<tr><th>Sim. No.</th><th>Description</th><th>Remarks</th></tr>
<tr><td>11</td><td>Checking switch operation
1. Enter 11 with the numeric keys.
2. Press the print key.
3. Press the all clear/reset key. Test copy mode is entered.
4. Select the paper source with the paper select key.
5. Press the print key. The copying operation starts and the paper size indicators turn on and off in sequence, showing the status of the individual switches.
<table><tr><th>Paper size indicator</th><th>Switch name</th><th>Remarks</th></tr><tr><td>A3/11 × 17
A4R/8 1/2 × 14
A5R/8 1/2 × 11R
A4/5 1/2 × 8 1/2R
B4/11 × 8 1/2</td><td>Registration switch
Eject switch
Home position switch
Lens home position switch
Toner level sensor</td><td>Each indicator lights when the switch it represents is turned on.</td></tr></table>6. Enter 10871087 with the numeric keys. The copier exits test copy mode and reenters simulation mode.</td><td>Check operations of switches on the paper conveying and optical systems.</td></tr>
<tr><td>12</td><td>Checking solenoid operation
1. Enter 12 with the numeric keys.
2. Press the print key. The drive motor and developing bias turn on.
3. Select the solenoid to be operated with the paper select key.
<table><tr><th>Mode</th><th>Solenoid</th></tr><tr><td>1
2
3</td><td>Bypass solenoid
Paper feed solenoid
Registration solenoid</td></tr></table>4. Press the print key. The selected solenoid turns on.
5. Press the stop/clear key. The drive motor and developing bias turn off.</td><td>Check solenoid operation with the machine driven.</td></tr>
</table>

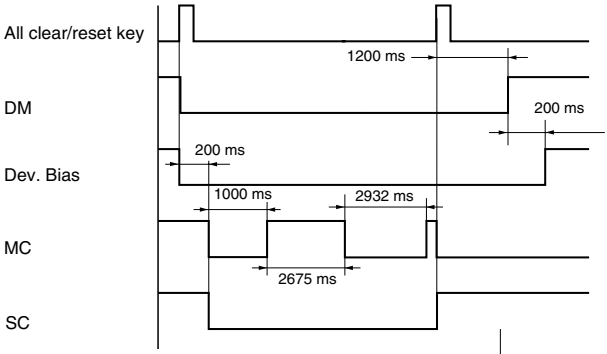
<table>
<tr><th>Sim. No.</th><th>Description</th><th>Remarks</th></tr>
<tr><td>14</td><td>Setting the folio size
1. Enter 14 with the numeric keys.
2. Press the print key. The current setting appears on the copy quantity display.
3. Change the setting with the zoom-up/down keys.
<table><tr><th>Contents</th><th>Setting range</th><th>Initial value</th></tr><tr><td>Folio length</td><td>330 to 356 (mm)</td><td>330 mm</td></tr></table>4. Press the print key. The new setting is stored.
5. Press the stop/clear key.</td><td></td></tr>
<tr><td>16</td><td>Checking for skewed paper feed with test copies
1. Enter 16 with the numeric keys.
2. Press the print key.
3. Select the maximum size of copy paper.
4. Open the original holder.
5. Press the print key. A test copy is made with the two end blank lamps off.
 
Normal Copy example A Copy example B
Figure 3-2-2
• If the test copy looks like example A, adjust the position of the drawer cover (see page 3-3-10). If it looks like example B, the paper conveying system has a problem.
6. Press the stop/clear key.</td><td>Check for mechanical distortion or a positioning error in the drum and paper conveying system.</td></tr>
</table>

Sim. No.	Description	Remarks
20	Turning the halogen lamp on 1. Enter 20 with the numeric keys. 2. Press the print key. 3. Select manual or photo mode and set the copy density (Exp.). 4. Press the print key. The halogen lamp lights at the selected intensity for 10 s at maximum and the optical section fan motor operates at the same time. • Pressing the stop/clear key turns the halogen lamp off. 5. Press the stop/clear key.	Check halogen lamp operation.
21	Checking scanning operation 1. Enter 21 with the numeric keys. 2. Press the print key. 3. Select the magnification ratio with the zoom-up/down keys. 4. Select the original size with the original select key. 5. Press the print key. The lens and mirrors 4 & 5 move to the positions for the selected magnification ratio and the scanner repeats scanning at a width and speed depending on the selected original size and magnification ratio. 6. Press the stop/clear key. The scanner stops. 7. Press the stop/clear key.	Check the scanner operation by running it at an arbitrary magnification ratio.
22	Adjusting the auto exposure reference value See page 3-3-34.	

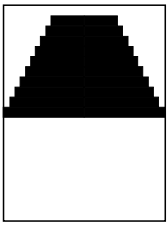
Sim. No.	Description	Remarks
23	Turning the lens motor on 1. Enter 23 with the numeric keys. 2. Press the print key. 3. Select the magnification ratio with the zoom-up/down keys. 4. Press the print key. The lens and mirrors 4 & 5 move to the positions for the selected magnification ratio. 5. Press the all clear/reset key. The lens and mirrors 4 & 5 cycle through the following magnification ratios. 100% → 86% → 70% → 64% ↑ ↓ 141% ← 122% ← 115% ← 100% 6. Press the stop/clear key. The lens and mirrors 4 & 5 stop.	
24	Setting the exposure amount See page 3-3-30.	
25	Adjusting lateral magnification See page 3-3-35.	
26	Adjusting longitudinal magnification See page 3-3-36.	
27	Adjusting leading edge registration timing See page 3-3-12.	
28	Setting the lens unit rank See page 3-3-38.	
29	Adjusting exposure amount for enlargement/reduction mode See page 3-3-37.	

<table>
<tr><th>Sim. No.</th><th>Description</th><th>Remarks</th></tr>
<tr><td>31</td><td>Setting transfer voltage
1. Enter 31 with the numeric keys.
2. Press the print key.
3. Change the setting with the zoom-up/down keys.
<table><tr><th>Contents</th><th>Setting range</th><th>Reference</th></tr><tr><td>Transfer voltage control value</td><td>0 to 7</td><td>5</td></tr></table>4. Press the print key. The new setting is stored.
5. Press the all clear/reset key. Operation check mode is entered and the following operation takes place under the new setting.
 

Timing chart 3-2-1
6. Press the all clear/reset key. The operation stops.
7. Press the stop/clear key.</td><td>See page 3-3-48.</td></tr>
</table>

<table>
<tr><th>Sim. No.</th><th>Description</th><th>Remarks</th></tr>
<tr><td>32</td><td>
Setting the drum potential
1. Enter 32 with the numeric keys.
2. Press the print key.
3. Select a mode with the paper select key.
4. Change the setting with the zoom-up/down keys.
<table>
<tr><th>Mode</th><th>Contents</th><th>Setting range</th><th>Reference</th></tr>
<tr><td>1</td><td>Normal-mode grid control value</td><td>0 to 255</td><td>190</td></tr>
<tr><td>2</td><td>Normal-mode main charging control value</td><td>0 to 3</td><td>1</td></tr>
<tr><td>3</td><td>Photo-mode grid control value</td><td>0 to 255</td><td>100</td></tr>
<tr><td>4</td><td>Photo-mode main charging control value</td><td>0 to 3</td><td>1</td></tr>
</table>
5. Press the print key. The new setting is stored.
6. Press the all clear/reset key. Operation check mode is entered and the following operation takes place under the new setting.


Timing chart 3-2-2
7. Press the all clear/reset key. The operation stops.
8. Press the stop/clear key.
</td><td>See page 3-3-44.</td></tr>
</table>

Sim. No.	Description	Remarks
42	Making a blank lamp test copy 1. Enter 42 with the numeric keys. 2. Press the print key. Test copy mode is entered. • Test copy mode can be exited by pressing the all clear/reset key. 3. Open the original holder. 4. Select the maximum size of copy paper. 5. Press the print key. The blank lamps light in a preset order and a check pattern as shown below is printed.  **Figure 3-2-3** 6. Press the stop/clear key.	Check blank lamp operation.

<table>
<tr><th>Sim. No.</th><th>Description</th><th>Remarks</th></tr>
<tr><td>46</td><td>Setting the fixing temperature
1. Enter 46 with the numeric keys.
2. Press the print key. The current setting appears on the copy quantity display.
3. Select a mode with the paper select key.
4. Change the fixing control temperature of the selected mode with the zoom-up/down keys.

<table>
<tr><th>Mode</th><th>Contents</th><th>Setting range</th><th>Reference</th></tr>
<tr><td>1</td><td>Standby (normal temperature*1)</td><td>170 to 200 (°C)</td><td>175°C</td></tr>
<tr><td>2</td><td>Standby (low temperature*2)</td><td>170 to 200 (°C)</td><td>177°C</td></tr>
<tr><td>3</td><td>During copying (normal temperature)</td><td>170 to 200 (°C)</td><td>175°C</td></tr>
<tr><td>4</td><td>During copying (low temperature)</td><td>170 to 200 (°C)</td><td>177°C</td></tr>
<tr><td>5</td><td>At the start of copying (normal temperature)</td><td>170 to 200 (°C)</td><td>175°C</td></tr>
<tr><td>6</td><td>At the start of copying (low temperature)</td><td>170 to 200 (°C)</td><td>182°C</td></tr>
</table>
*1 Normal temperature: external temperature of 20°C/68°F or above
*2 Low temperature: external temperature below 20°C/68°F

5. Press the print key. The new setting is stored.
6. Press the stop/clear key.</td><td>Set the fixing control temperature during standby and copying.</td></tr>
<tr><td>47</td><td>Setting the fixing preheat temperature
1. Enter 47 with the numeric keys.
2. Press the print key. The current setting appears on the copy quantity display.
3. Change the setting with the zoom-up/down keys.

<table>
<tr><th>Contents</th><th>Setting range</th><th>Reference</th></tr>
<tr><td>Fixing control temperature during preheat mode</td><td>100 to 170 (°C)</td><td>100°C</td></tr>
</table>
4. Press the print key. The new setting is stored.
5. Press the stop/clear key.</td><td>Set the fixing control temperature during preheat mode.</td></tr>
</table>

<table>
<tr><th>Sim. No.</th><th>Description</th><th>Remarks</th></tr>
<tr><td>50</td><td>Lighting all the indicators on the operation panel
1. Enter 50 with the numeric keys.
2. Press the print key. All the indicators on the operation panel light.
3. Press the stop/clear key. All the indicators turn off.</td><td>Check the indicators on the operation panel.</td></tr>
<tr><td>52</td><td>Adjusting ADF leading edge registration timing
1. Enter 52 with the numeric keys.
2. Press the print key. The current setting appears on the copy quantity display.
3. Change the setting with the zoom-up/down keys.
<table>
<tr><th>Contents</th><th>Setting range</th><th>Reference</th><th>Amount of change per step</th></tr>
<tr><td>Original stop position</td><td>37 to 163</td><td>100</td><td>0.42 mm</td></tr>
</table>
4. Press the print key. The new setting is stored.
5. Press the all clear/reset key. Test copy mode is entered.
6. Press the print key to make a test copy.
7. Press the stop/clear key.</td><td>Adjust the position where the original fed from the ADF stops.</td></tr>
<tr><td>54</td><td>Adjusting the leading edge margin
See page 3-3-14.</td><td></td></tr>
<tr><td>55</td><td>Adjusting the side erasure
1. Enter 55 with the numeric keys.
2. Press the print key. The current setting appears on the copy quantity display.
3. Change the setting with the zoom-up/down keys.
<table>
<tr><th>Setting</th><th>Blank cut margin</th></tr>
<tr><td>0</td><td>None</td></tr>
<tr><td>1</td><td>Small</td></tr>
<tr><td>2</td><td>Medium</td></tr>
<tr><td>3</td><td>Large</td></tr>
</table>
4. Press the print key. The new setting is stored.
5. Press the stop/clear key.</td><td>Set the blank cut margin to eliminate the shadow of the ADF original conveying belt by changing the number of blank lamps turned on.</td></tr>
</table>

<table>
<tr><th>Sim. No.</th><th>Description</th><th>Remarks</th></tr>
<tr><td>59</td><td>Adjusting the trailing edge blank cut
See page 3-3-15, 16.</td><td></td></tr>
<tr><td>60</td><td>Initializing the toner control level
1. Enter 60 with the numeric keys.
2. Press the print key.
3. Press the print key. Aging starts and the toner sensor control voltage is automatically set for the new developer. After about 3 minutes, the drive stops and the set value appears on the copy quantity display. The developing unit drive time data is cleared. If the result of automatic setting does not fall in the range between 26 and 230 (0.5 to 4.5 V) due to a problem in the developing section, the new value is not stored and no data is shown on the display.
• If the stop/clear key is pressed during aging, the operation stops and the toner sensor control voltage remains unchanged.
4. Press the stop/clear key.</td><td>To be run during machine setup or when developer is replaced.</td></tr>
<tr><td>61</td><td>Forcing toner feed
1. Enter 61 with the numeric keys.
2. Press the print key. Aging starts and toner is replenished until the toner sensor output voltage reaches the toner feed stop level.
• The toner sensor output voltage is shown on the copy quantity display during toner replenishing.
• To interrupt toner replenishing, press the stop/clear key.
3. Press the stop/clear key.</td><td>To be run when toner is empty.</td></tr>
<tr><td>62</td><td>Adjusting the toner sensor control voltage
1. Enter 62 with the numeric keys.
2. Press the print key. The current setting appears on the copy quantity display.
3. Change the setting with the zoom-up/down keys.
<table><tr><th>Contents</th><th>Setting range</th><th>Reference</th></tr><tr><td>Toner sensor control voltage</td><td>0 to 5.00 (V)</td><td>2.00 V</td></tr></table>4. Press the print key. The new setting is stored.
5. Press the stop/clear key.</td><td>Check and change the toner sensor control voltage set by simulation 60.</td></tr>
</table>

<table>
<tr><th>Sim. No.</th><th>Description</th><th>Remarks</th></tr>
<tr><td>70</td><td>Initializing the backup memory
1. Enter 70 with the numeric keys.
2. Press the print key.
3. Press the all clear/reset key. The following data in memory is initialized.

<table>
<tr><th>Contents</th><th>Initial data</th><th>Sim. No.</th></tr>
<tr><td>ADF operation without originals</td><td>0</td><td>05</td></tr>
<tr><td>Folio size</td><td>330</td><td>14</td></tr>
<tr><td>Auto exposure</td><td></td><td>22</td></tr>
<tr><td>Prescan exposure amount</td><td>190</td><td></td></tr>
<tr><td>NTC level</td><td>415</td><td></td></tr>
<tr><td>NPTC level</td><td>250</td><td></td></tr>
<tr><td>Exposure amount</td><td></td><td>24</td></tr>
<tr><td>Exp. 1</td><td>160</td><td></td></tr>
<tr><td>Exp. 4</td><td>175</td><td></td></tr>
<tr><td>Exp. 7</td><td>195</td><td></td></tr>
<tr><td>Exp. 7-1</td><td>185</td><td></td></tr>
<tr><td>Photo-mode Exp. 4</td><td>155</td><td></td></tr>
<tr><td>Lateral magnification</td><td></td><td>25</td></tr>
<tr><td>100% copy</td><td>25</td><td></td></tr>
<tr><td>Enlargement copy</td><td>20</td><td></td></tr>
<tr><td>Reduction copy</td><td>20</td><td></td></tr>
<tr><td>Longitudinal magnification</td><td>7</td><td>26</td></tr>
<tr><td>Leading edge registration timing</td><td></td><td>27</td></tr>
<tr><td>100% copy</td><td>70</td><td></td></tr>
<tr><td>Enlargement copy</td><td>70</td><td></td></tr>
<tr><td>Reduction copy</td><td>70</td><td></td></tr>
<tr><td>Lens unit rank</td><td>4</td><td>28</td></tr>
<tr><td>Enlargement/reduction-mode exposure amount</td><td></td><td>29</td></tr>
<tr><td>Enlargement copy</td><td>166</td><td></td></tr>
<tr><td>Reduction copy</td><td>170</td><td></td></tr>
<tr><td>Transfer voltage</td><td>5</td><td>31</td></tr>
</table>
</td><td>To be run after replacing the NVRAM on the main PCB or if backup data has been erased due to a problem with the NVRAM.</td></tr>
</table>

Sim. No.	Description	Remarks
70 (cont.)		

Contents	Initial data	Sim. No.
Drum potential		32
Normal mode		
Grid control value	190	
Main charging control value	1	
Photo mode		
Grid control value	100	
Main charging control value	1	
Fixing temperature		46
Standby (normal temp.)	175	
Standby (low temp.)	177	
Copying (normal temp.)	175	
Copying (low temp.)	177	
Start of copying (normal temp.)	175	
Start of copying (low temp.)	182	
Fixing preheat temperature	100	47
ADF leading edge registration timing	100	52
Leading edge margin		54
100% copy	75	
Enlargement copy	100	
Reduction copy	30	
Side erasure	1	55
Trailing edge blank cut		59
100% copy	55	
Reduction copy	25	
Toner sensor control voltage	200	62
Maintenance cycle	40000	71
Maintenance count	0 (cleared)	72
Service call records	0 (all cleared)	73
Jam counts	0 (all cleared)	74
Service call counts	0 (all cleared)	76
Paper feed counts	0 (all cleared)	77
Double/single counts	0	80
Initial exposure mode	0	81
Manual/auto modes	0	82
Exposure scale	1	83
Auto clear time	90	84

Sim. No.	Description	Remarks
70 (cont.)		

Contents	Initial data	Sim. No.
Auto preheat time	15	85
Auto shutoff time	30	86
Paper size	0	88
Maximum preset No. of copies	100	89
Operation under the toner empty condition		91
No. of copies	0 (unlimited)	
Copy mode	0 (single copies)	
Auto start	1	92
Destination	1 (metric)	93
Optical section fan motor control	0 (normal)	98

4. Press the stop/clear key.
   - After running this simulation, it is necessary to take the following procedure:
     1. Run simulation 93 to set the destination.
     2. Run each simulation listed above and reenter their values on the simulation label.

<table>
<tr><th>Sim. No.</th><th>Description</th><th>Remarks</th></tr>
<tr><td>71</td><td>
Setting the maintenance cycle
1. Enter 71 with the numeric keys.
2. Press the print key.
3. Select a mode with the paper select key. The maintenance cycle appears on the copy quantity display.
<table>
<tr><th>Mode</th><th>Contents</th><th>Setting range</th><th>Initial value</th></tr>
<tr><td>1</td><td>100,000s and 10,000s digits</td><td>0 to 10</td><td>4</td></tr>
<tr><td>2</td><td>1,000s and 100s digits</td><td>0 to 99</td><td>0</td></tr>
<tr><td>3</td><td>10s and 1s digits</td><td>0 to 99</td><td>0</td></tr>
</table>
4. Change the setting of each mode with the zoom-up/down keys.
Example: 4 for mode 1
0 for mode 2
0 for mode 3
In this example, the maintenance cycle is 40,000. Setting all the modes to 0 cancels the maintenance cycle detection.
5. Press the print key. The new setting is stored.
Caution: It is necessary to press the print key for each mode to store the new setting.
6. Press the stop/clear key.
</td><td>Check and change the maintenance cycle.</td></tr>
</table>

<table>
<tr><th>Sim. No.</th><th>Description</th><th>Remarks</th></tr>
<tr><td>72</td><td>
Checking/clearing the maintenance count
1. Enter 72 with the numeric keys.
2. Press the print key.
3. Select a mode with the paper select key. The maintenance count appears on the copy quantity display.
<table>
<tr><th>Mode</th><th>Contents</th><th>Setting range</th><th>Initial value</th></tr>
<tr><td>1</td><td>100,000s and 10,000s digits</td><td>0 to 99</td><td>0</td></tr>
<tr><td>2</td><td>1,000s and 100s digits</td><td>0 to 99</td><td>0</td></tr>
<tr><td>3</td><td>10s and 1s digits</td><td>0 to 99</td><td>0</td></tr>
</table>
• To change the maintenance count
4. Change the setting with the zoom-up/down keys in each mode.
Example: 7 for mode 1
0 for mode 2
0 for mode 3
In this example, the maintenance count is 70,000.
5. Press the print key. The new setting is stored.
Caution: It is necessary to press the print key for each mode to store the new setting.
• To clear the maintenance count
6. Press the all clear/reset key. All the digits of the count are reset to 0 (all cleared).
7. Press the stop/clear key.
</td><td></td></tr>
</table>

<table>
<tr><th>Sim. No.</th><th>Description</th><th>Remarks</th></tr>
<tr><td>73</td><td>Checking/clearing service call records
1. Enter 73 with the numeric keys.
2. Press the print key.
<table><tr><th>Mode</th><th>Copy quantity display</th></tr><tr><td>1</td><td>Service call detection records (–1 to –10)</td></tr><tr><td>2</td><td>Service call code</td></tr><tr><td>3</td><td>Maintenance count, 100,000s and 10,000s digits (0 to 99)</td></tr><tr><td>4</td><td>Maintenance count, 1,000s and 100s digits (0 to 99)</td></tr><tr><td>5</td><td>Maintenance count, 10s and 1s digits (0 to 99)</td></tr></table>
• To check the service call records
3. In mode 1, select the service call record to be checked by changing the value with the exposure adjustment keys.
• The larger the value, the older the record.
4. Select mode 2 with paper select key to check the service call code.
5. Select modes 3, 4 and 5 in order with the paper select key to check the maintenance count when the service call code was detected.

• To clear the service call records
6. Press the all clear/reset key. All the service call records are cleared.
7. Press the stop/clear key.</td><td>Display the codes and maintenance counts of the last ten service call detections.</td></tr>
</table>

<table>
<tr><th>Sim. No.</th><th>Description</th><th>Remarks</th></tr>
<tr><td>74</td><td>
Checking/clearing jam counts
1. Enter 74 with the numeric keys.
2. Press the print key. The current count appears on the copy quantity display.
3. Select the mode to be displayed with the paper select key.
<table>
<tr><th>Mode</th><th>Jam code</th><th>Jam location</th><th>Setting range</th></tr>
<tr><td>1</td><td>J30</td><td>Registration section</td><td>0 to 255</td></tr>
<tr><td>2</td><td>J40</td><td>Paper conveying and fixing sections</td><td>0 to 255</td></tr>
<tr><td>3</td><td>J50</td><td>Eject section</td><td>0 to 255</td></tr>
</table>
• To clear an individual jam count
4. Select the jam code whose count should be cleared and set the value to 0 with zoom-up/down keys.
5. Press the print key. The count of the selected jam code is cleared.

• To clear the all jam counts
6. Press the all clear/reset key. All the jam counts are reset to 0.

7. Press the stop/clear key.
</td><td></td></tr>
</table>

<table>
<tr><th>Sim. No.</th><th>Description</th><th>Remarks</th></tr>
<tr><td>76</td><td>
Checking/clearing the service call counts
1. Enter 76 with the numeric keys.
2. Press the print key. A service call code and its count appear alternately on the copy quantity display.
3. Press the paper select key to check the counts of other service call codes.
<table>
<tr><th>Code</th><th>Contents</th></tr>
<tr><td>C20</td><td>Drive motor problem</td></tr>
<tr><td>C30</td><td>Scanner motor problem</td></tr>
<tr><td>C40</td><td>Lens motor problem</td></tr>
<tr><td>C50</td><td>Shorted high-voltage transformer PCB</td></tr>
<tr><td>C61</td><td>Broken fixing heater filament</td></tr>
<tr><td>C63</td><td>Broken fixing unit thermistor wire</td></tr>
<tr><td>C64</td><td>Shorted fixing unit thermistor/ abnormally high temperature</td></tr>
<tr><td>C72</td><td>Broken drum thermistor wire</td></tr>
<tr><td>C73</td><td>Shorted drum thermistor</td></tr>
<tr><td>C74</td><td>Broken external temperature thermistor wire</td></tr>
<tr><td>C75</td><td>Shorted external temperature thermistor</td></tr>
<tr><td>C90</td><td>Copier-ADF serial communication problem</td></tr>
</table>
• To clear an individual service call count
4. Select the code to be cleared with the paper select key and set the value to 0 with the zoom-up/down keys.
5. Press the print key. The count of the selected code is cleared.
• To clear all the service call counts
6. Press the all clear/reset key. All the service call counts are reset to 0.
7. Press the stop/clear key.
</td><td></td></tr>
</table>

<table>
<tr><th>Sim. No.</th><th>Description</th><th>Remarks</th></tr>
<tr><td>77</td><td>
Checking/clearing the paper feed counts
1. Enter 77 with the numeric keys.
2. Press the print key. The current count appears on the copy quantity display.
3. Select the mode to be displayed with the paper select key.
<table>
<tr><th>Mode</th><th>Contents</th><th>Setting range</th></tr>
<tr><td>1</td><td>Bypass, 100,000s and 10,000s digits</td><td>0 to 99</td></tr>
<tr><td>2</td><td>Bypass, 1,000s and 100s digits</td><td>0 to 99</td></tr>
<tr><td>3</td><td>Bypass, 10s and 1s digits</td><td>0 to 99</td></tr>
<tr><td>4</td><td>Drawer, 100,000s and 10,000s digits</td><td>0 to 99</td></tr>
<tr><td>5</td><td>Drawer, 1,000s and 100s digits</td><td>0 to 99</td></tr>
<tr><td>6</td><td>Drawer, 10s and 1s digits</td><td>0 to 99</td></tr>
</table>
• To clear the paper feed counts by paper sources
4. In modes 1, 2 & 3, or modes 4, 5 & 6, set the values to 0 with the zoom-up/down keys.
5. Press the print key. The count for the selected paper source is cleared.

• To clear all the paper feed counts
6. Press the all clear/reset key. All the paper feed counts are reset to 0.

7. Press the stop/clear key.
</td><td></td></tr>
</table>

<table>
<tr><th>Sim. No.</th><th>Description</th><th>Remarks</th></tr>
<tr><td>80</td><td>Selecting between double/single counts
1. Enter 80 with the numeric keys.
2. Press the print key. The current setting appears on the copy quantity display.
3. Select the total counter counting method with the zoom-up/down keys.
<table><tr><th>Setting</th><th>Counting method</th></tr><tr><td>0</td><td>A3/11" × 17" copies are counted as doubles.</td></tr><tr><td>1</td><td>All sizes of copies are counted as singles.</td></tr></table>4. Press the print key.
5. Press the stop/clear key.</td><td>Switch the counting method for the total and maintenance counters between double and single.</td></tr>
<tr><td>81</td><td>Setting initial exposure mode
1. Enter 81 with the numeric keys.
2. Press the print key. The current setting appears on the copy quantity display.
3. Select the initial exposure mode with the zoom-up/down keys.
<table><tr><th>Setting</th><th>Initial exposure mode</th></tr><tr><td>0</td><td>Auto exposure</td></tr><tr><td>1</td><td>Manual exposure, Exp. 4</td></tr></table>4. Press the print key.
5. Press the stop/clear key.</td><td>Select the initial exposure mode.</td></tr>
</table>

<table>
<tr><th>Sim. No.</th><th>Description</th><th>Remarks</th></tr>
<tr><td>82</td><td>Selecting between manual/auto modes
1. Enter 82 with the numeric keys.
2. Press the print key. The current setting appears on the copy quantity display.
3. Select the initial copy mode with the zoom-up/down keys.
<table><tr><th>Setting</th><th>Initial copy mode</th></tr><tr><td>0
1</td><td>Auto mode
Manual mode</td></tr></table>
4. Press the print key.
5. Press the stop/clear key.</td><td>Select the initial copy mode.</td></tr>
<tr><td>83</td><td>Selecting the exposure scale
1. Enter 83 with the numeric keys.
2. Press the print key. The current setting appears on the copy quantity display.
3. Select the exposure scale with the zoom-up/down keys.
<table><tr><th>Setting</th><th>Exposure scale</th></tr><tr><td>0
1</td><td>25 steps
19 steps</td></tr></table>
4. Press the print key.
5. Press the stop/clear key.</td><td>Select the exposure scale for manual exposure mode.</td></tr>
</table>

<table>
<tr><th>Sim. No.</th><th>Description</th><th>Remarks</th></tr>
<tr><td>84</td><td>Setting the auto clear time
1. Enter 84 with the numeric keys.
2. Press the print key. The current setting appears on the copy quantity display.
3. Change the setting with the zoom-up/down keys.
<table><tr><th>Contents</th><th>Setting range</th><th>Initial value</th></tr><tr><td>Auto clear time</td><td>0 (cancelled), 30 to 270 (s)</td><td>90 s</td></tr></table>• Every press of the zoom-up or -down key changes the value by 30. Select 0 to cancel the auto clear function.
4. Press the print key. The new setting is stored.
5. Press the stop/clear key.</td><td></td></tr>
<tr><td>85</td><td>Setting the auto preheat time
1. Enter 85 with the numeric keys.
2. Press the print key. The current setting appears on the copy quantity display.
3. Change the setting with the zoom-up/down keys.
<table><tr><th>Contents</th><th>Setting range</th><th>Initial value</th></tr><tr><td>Auto preheat time</td><td>0 (cancelled), 5 to 45 (min.)</td><td>15 min.</td></tr></table>• Every press of the zoom-up or -down key changes the value by 5. Select 0 to cancel the auto preheat function.
4. Press the print key. The new setting is stored.
5. Press the stop/clear key.</td><td></td></tr>
</table>

<table>
<tr><th>Sim. No.</th><th>Description</th><th>Remarks</th></tr>
<tr><td>86</td><td>Setting the auto shutoff time
1. Enter 86 with the numeric keys.
2. Press the print key. The current setting appears on the copy quantity display.
3. Change the setting with the zoom-up/down keys.
<table><tr><th>Contents</th><th>Setting range</th><th>Initial value</th></tr><tr><td>Auto shutoff time</td><td>0 (cancelled),
15 to 120 (min.)</td><td>30 min.</td></tr></table>• Every press of the zoom-up or -down key changes the value by 15. Select 0 to cancel the auto shutoff function.
4. Press the print key. The new setting is stored.
5. Press the stop/clear key.</td><td></td></tr>
<tr><td>88</td><td>Setting the paper size
1. Enter 88 with the numeric keys.
2. Press the print key. The current setting appears on the copy quantity display.
3. Select the paper size with the zoom-up/down keys.
<table><tr><th>Setting</th><th>Paper size</th></tr><tr><td>0
1</td><td>Folio
B5</td></tr></table>4. Press the print key. The new setting is stored.
5. Press the stop/clear key.</td><td></td></tr>
</table>

<table>
<tr><th>Sim. No.</th><th>Description</th><th>Remarks</th></tr>
<tr><td>89</td><td>Setting the maximum preset number of copies
1. Enter 89 with the numeric keys.
2. Press the print key. The current setting appears on the copy quantity display.
3. Change the setting with the zoom-up/down keys.
<table><tr><th>Contents</th><th>Setting range</th><th>Initial value</th></tr><tr><td>Maximum preset number of copies</td><td>1 to 250 (copies)</td><td>100 copies</td></tr></table>4. Press the print key. The new setting is stored.
5. Press the stop/clear key.</td><td>Set the maximum number of copies preset by the numeric keys.</td></tr>
<tr><td>91</td><td>Setting operation under the toner empty condition
1. Enter 91 with the numeric keys.
2. Press the print key. The current setting appears on the copy quantity display.
3. Select the mode to be changed with the paper select key.
4. Change the setting with the zoom-up/down keys.
<table><tr><th>Mode</th><th>Contents</th><th colspan="2">Setting</th></tr><tr><td rowspan="2">1</td><td rowspan="2">Maximum No. of copies</td><td>0</td><td>1 to 200</td></tr><tr><td>Unlimited</td><td>1 to 200 copies</td></tr><tr><td rowspan="2">2</td><td rowspan="2">Copy mode</td><td>0</td><td>1</td></tr><tr><td>Single copies</td><td>Continuous copying possible</td></tr></table>5. Press the print key. The new setting is stored.
6. Press the stop/clear key.</td><td>Select the maximum number of copies and the copy mode that are possible under the toner empty condition.</td></tr>
</table>

<table>
<tr><th>Sim. No.</th><th>Description</th><th>Remarks</th></tr>
<tr><td>92</td><td>Selecting between auto start on/off
1. Enter 92 with the numeric keys.
2. Press the print key. The current setting appears on the copy quantity display.
3. Select the auto start setting with the zoom-up/down keys.
<table><tr><th>Setting</th><th>Contents</th></tr><tr><td>0
1</td><td>Auto start function off
Auto start function on</td></tr></table>
4. Press the print key.
5. Press the stop/clear key.</td><td></td></tr>
<tr><td>93</td><td>Setting the destination
1. Enter 93 with the numeric keys.
2. Press the print key. The current setting appears on the copy quantity display.
3. Select the destination setting with the zoom-up/down keys.
<table><tr><th>Setting</th><th>Contents</th></tr><tr><td>0
1</td><td>Inch specifications
Metric specifications</td></tr></table>
4. Press the print key.
5. Press the stop/clear key.
Caution: Setting the destination changes the drawer paper size setting by the user automatically as follows:
<table><tr><th>93 Destination setting</th><th>Drawer paper size setting</th></tr><tr><td>Inch specifications
Metric specifications</td><td>11" × 8 1/2"
A4</td></tr></table></td><td></td></tr>
<tr><td>98</td><td>Setting the optical section fan motor control
See page 3-3-39.</td><td></td></tr>
</table>

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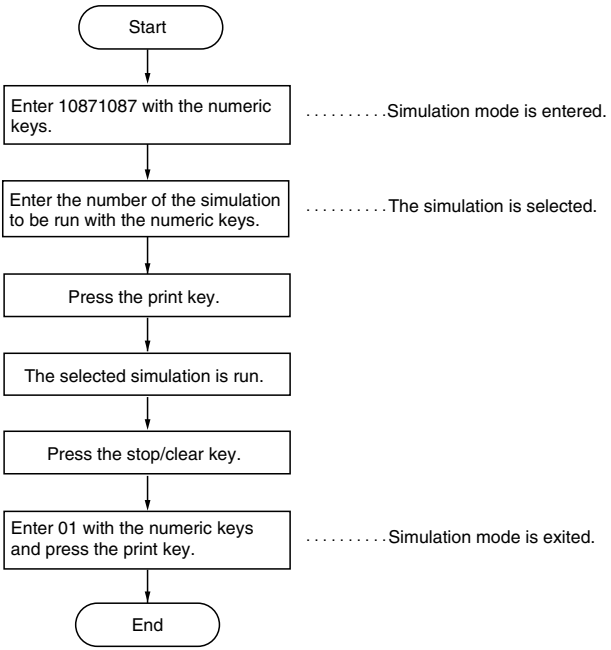
3-3-1 Precautions for assembly and disassembly

(1) Precautions

- Be sure to turn the main switch off and disconnect the power plug before starting disassembly.
- When handling PCBs, do not touch connectors with bare hands or damage the board.
- Do not touch any PCB containing IC's with bare hands or any object prone to static charge.
- Use only the specified parts to replace the fixing unit or optical section thermostats. Never substitute wire for thermostats, as the copier may be seriously damaged. When installing a thermostat, ensure the correct clearance, if specified, using a thickness gauge.
- Do not turn the red screw on the image formation unit.
- Use the following testers when measuring voltages:
  Hioki 3200
  Sanwa MD-180C
  Sanwa YX-360TR
  Beckman TECH300
  Beckman DM45
  Beckman 330 (capable of measuring RMS values)
  Beckman 3030 (capable of measuring RMS values)
  Beckman DM850 (capable of measuring RMS values)
  Fluke 8060A (capable of measuring RMS values)
  Arlec DMM1050
  Arlec YF1030C
- Prepare the following as test originals:
  1. NTC (new test chart)
  2. NPTC (newspaper test chart)

(2) Running a simulation


Start
Enter 10871087 with the numeric keys.
.....Simulation mode is entered.
Enter the number of the simulation to be run with the numeric keys.
.....The simulation is selected.
Press the print key.
The selected simulation is run.
Press the stop/clear key.
Enter 01 with the numeric keys and press the print key.
.....Simulation mode is exited.
End

3-3-2 Paper feed section

(1) Detaching and refitting paper feed pulleys A and B

Clean or replace paper feed pulley A or B as follows.

Procedure

1. Detach the rear cover.
2. Insert a straight screwdriver through the gap below the right side of the composite PCB and hold the paper feed solenoid on. Turn the drive motor counterclockwise by hand; drawer paper feed shaft A turns to an angle where the paper feed pulleys can be easily removed.

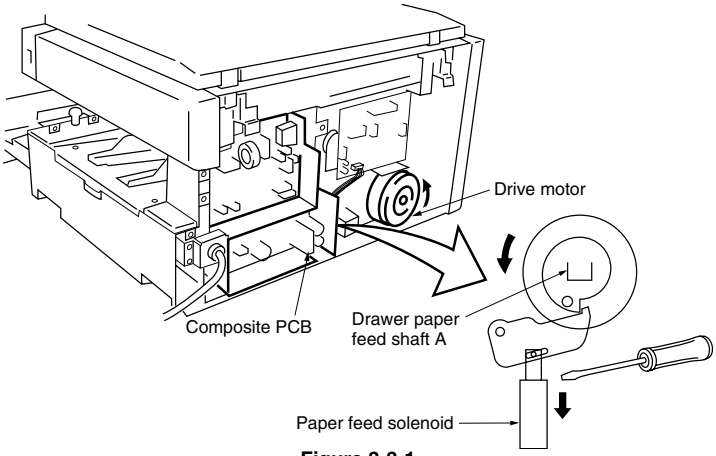


Figure 3-3-1

3. Remove the original holder.
4. Remove the paper drawer and bypass cover.
5. Open the front cover and take the image formation unit out of the copier.
6. Place the copier on its left side as shown below.

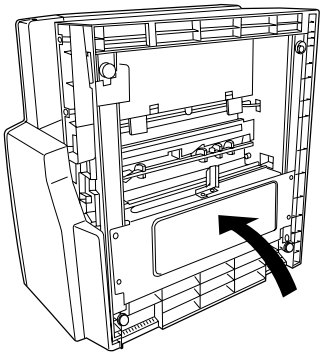


Figure 3-3-2

Removing paper feed pulley A

7. Remove the screw and paper feed pulley A from drawer paper feed shaft A.

Removing paper feed pulley B

8. Remove the screw and paper feed pulley B from drawer paper feed shaft A.
9. Clean or replace paper feed pulley A and/or B.
   - When refitting paper feed pulley A and B, orient them with their white surfaces toward the machine front.
10. Refit all the removed parts.

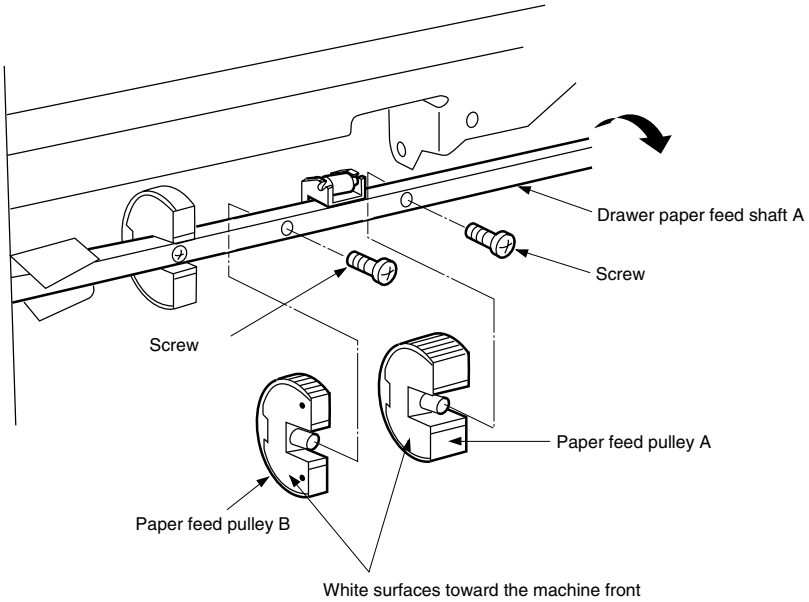


Figure 3-3-3 Detaching paper feed pulleys A and B

(2) Detaching and refitting the bypass lower pulley
Clean or replace the bypass lower pulley as follows.

Procedure

1. Detach the original holder.
2. Pull out the paper drawer.
3. Remove the bypass cover.
4. Open the front cover and take the image formation unit out of the copier.
5. Place the copier on its left side as shown below.
6. Remove the screw and the limiter mount.

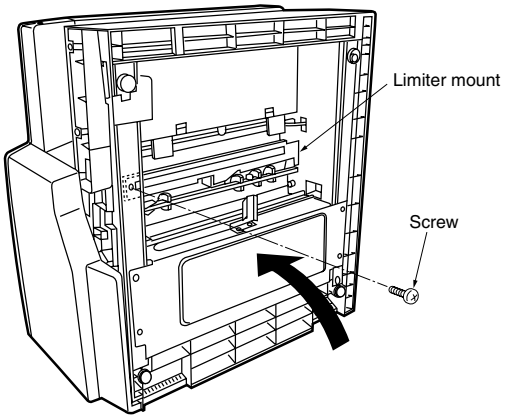


Figure 3-3-4

7. Remove the E ring and pull the bypass lower pulley off the limiter shaft.

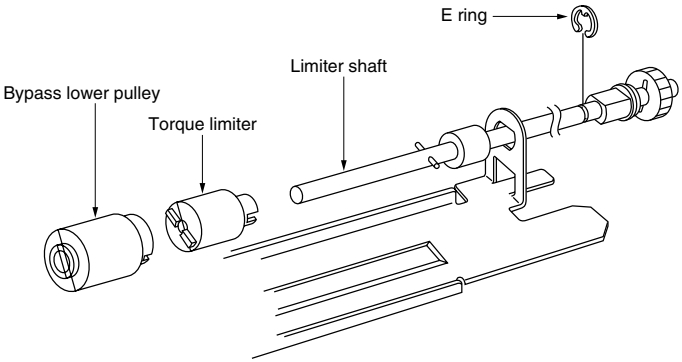


Figure 3-3-5 Removing the bypass lower pulley

8. Clean or replace the bypass lower pulley.
9. Refit all the removed parts.

(3) Detaching and refitting the bypass upper pulley
Clean or replace the bypass upper pulley as follows.

Procedure

1. Remove the right lower cover.
2. Disengage the stopper hook from the opening in the bypass paper feed shaft by lifting the shaft slightly, and remove the stopper and bushing from the shaft.
   • Do not lift the bypass paper feed shaft too far.
3. Remove the screw and bypass upper pulley from the bypass paper feed shaft.
4. Clean or replace the bypass upper pulley.
5. Refit all the removed parts.

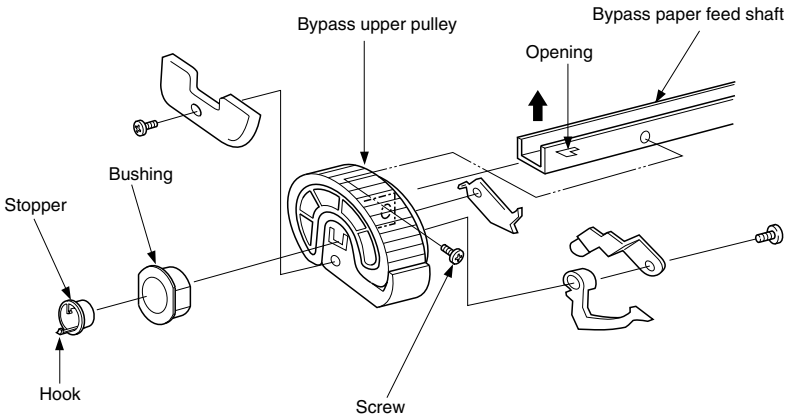


Figure 3-3-6 Detaching the bypass upper pulley

(4) Replacing the bypass paper width switch

Replace the bypass paper width switch as follows.

Important: After replacing the bypass paper width switch, be sure to perform (7) Adjusting the position of the bypass table adjuster.

Procedure

1. Remove the bypass, right lower and rear covers.
2. Unplug all the connectors inserted into the composite PCB.
3. Remove the two screws and composite PCB.
4. Remove the two screws and power supply assembly.
5. Remove the bypass table 10-pin connector from CN12 on the main PCB.
6. Open the drawer and remove the two screws holding the bypass table assembly on the machine front.
7. Remove the two screws inside and the one on the rear from the bypass table assembly and detach the assembly from the copier.

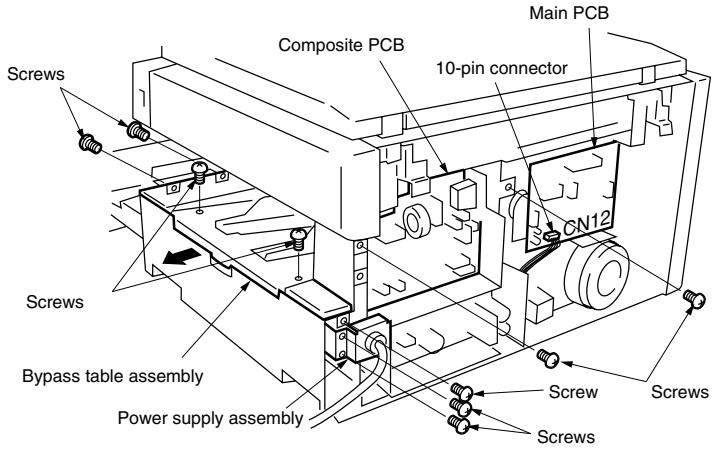


Figure 3-3-7 Detaching the bypass table assembly

8. Reverse the bypass table assembly and remove the 5-pin connector of the bypass paper width switch.
9. Remove the two screws and bypass paper width switch.

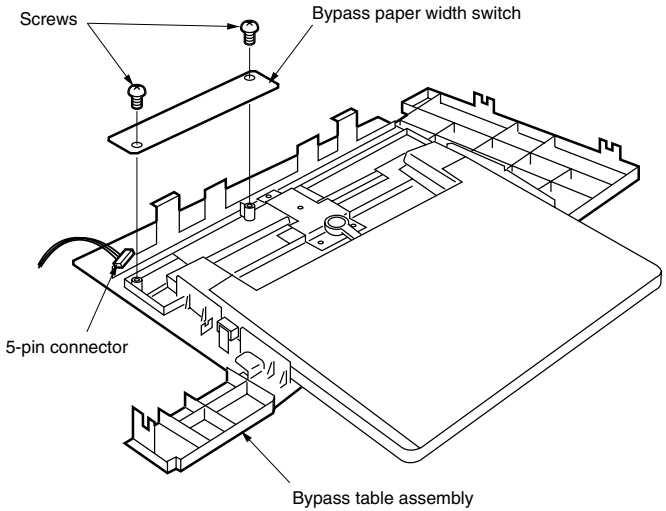


Figure 3-3-8 Detaching the bypass paper width switch

10. Apply the specified grease to the printed surface of the new bypass paper width switch (shaded area in the diagram) and fit the switch to the bypass table assembly.

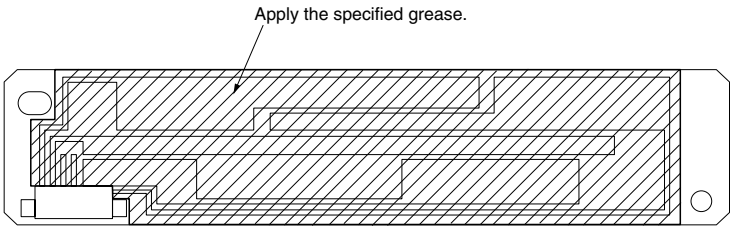


Figure 3-3-9 Bypass paper width switch

(5) Adjusting the position of the original size indicator

Perform the following adjustment if there is a regular error between the centers of the original and the copy image.

Procedure

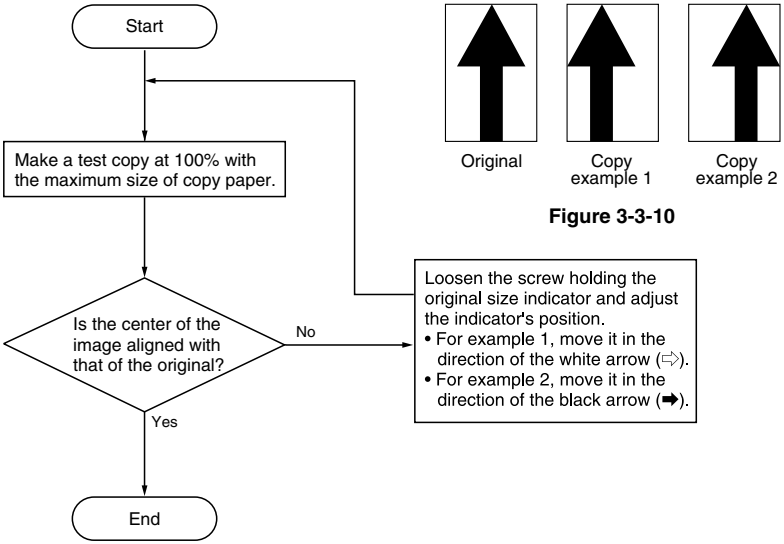

Start
Make a test copy at 100% with the maximum size of copy paper.
Is the center of the image aligned with that of the original?
No
Yes
Loosen the screw holding the original size indicator and adjust the indicator's position.
• For example 1, move it in the direction of the white arrow (⇨).
• For example 2, move it in the direction of the black arrow (➡).
End
Original
Copy example 1
Copy example 2

Figure 3-3-10

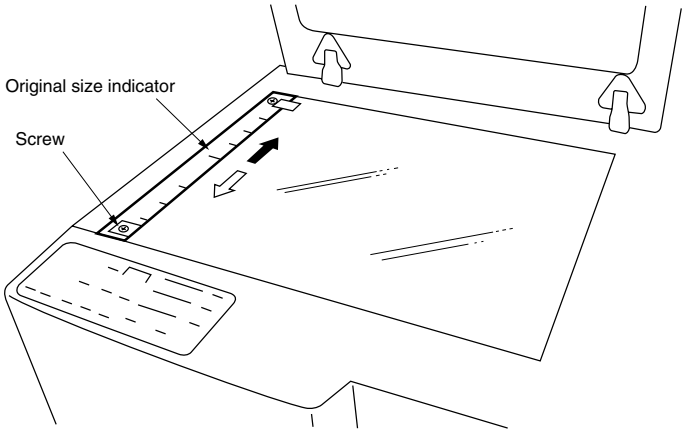


Figure 3-3-11 Adjusting the position of the original size indicator

(6) Adjusting the position of the drawer cover

Perform the following adjustment if there is a regular error between the centers of the original and the copy image on the paper fed from the drawer.

Important: Before starting this adjustment, ensure (5) Adjusting the position of the original size indicator has been completed.

Procedure

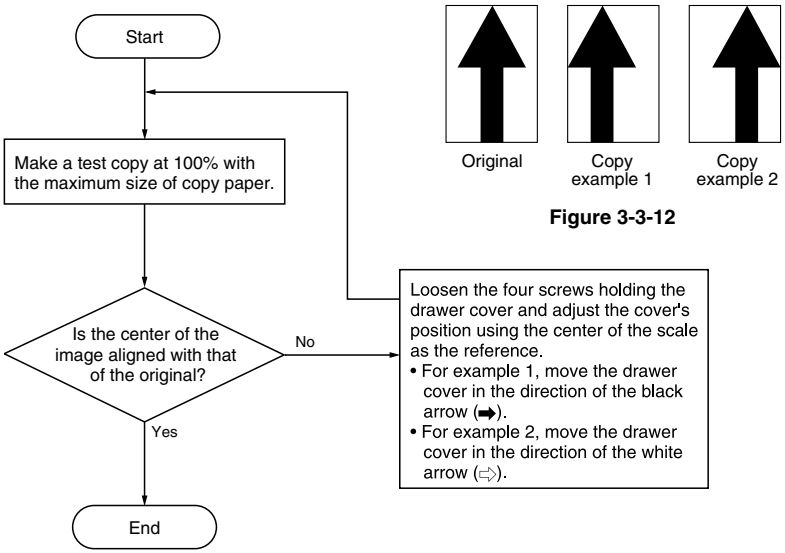

Start
Make a test copy at 100% with the maximum size of copy paper.
Is the center of the image aligned with that of the original?
No
Yes
End
Loosen the four screws holding the drawer cover and adjust the cover's position using the center of the scale as the reference.
• For example 1, move the drawer cover in the direction of the black arrow (➡).
• For example 2, move the drawer cover in the direction of the white arrow (⇨).
Original
Copy example 1
Copy example 2

Figure 3-3-12

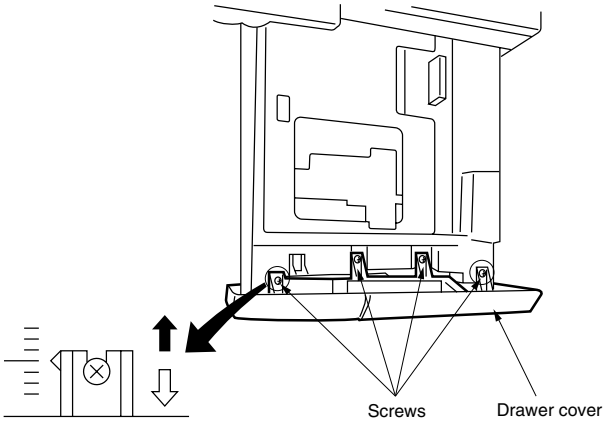


Figure 3-3-13 Adjusting the position of the drawer cover

(7) Adjusting the position of the bypass table adjuster

Perform the following adjustment if there is a regular error between the centers of the original and the copy image on the paper fed from the bypass.

Important: Before starting this adjustment, ensure (5) Adjusting the position of the original size indicator has been completed.

Procedure

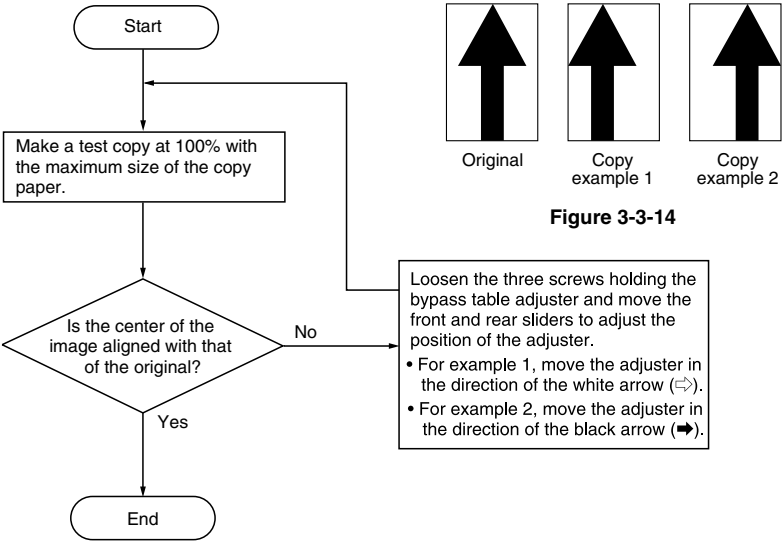

Start
Make a test copy at 100% with the maximum size of the copy paper.
Is the center of the image aligned with that of the original?
No
Yes
End
Loosen the three screws holding the bypass table adjuster and move the front and rear sliders to adjust the position of the adjuster.
• For example 1, move the adjuster in the direction of the white arrow (⇨).
• For example 2, move the adjuster in the direction of the black arrow (➡).
Original
Copy example 1
Copy example 2

Figure 3-3-14

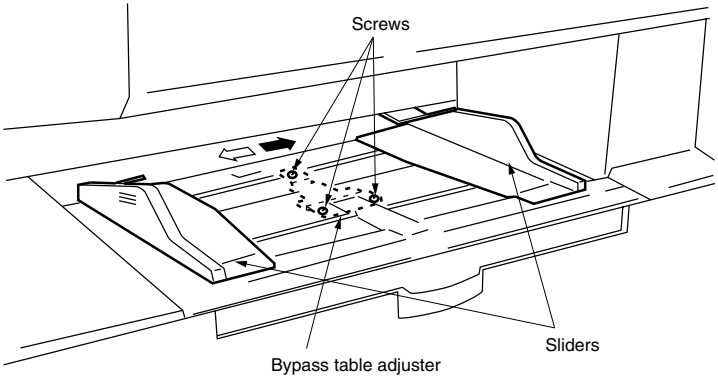


Figure 3-3-15 Adjusting the position of the bypass table adjuster

(8) Adjustments after installing rollers and solenoids
Perform the following adjustments after detaching and refitting the rollers and solenoids.

(8-1) Adjusting leading edge registration timing
Adjust the registration timing if there is a regular error between the leading edges of the original and the copy image.

Procedure

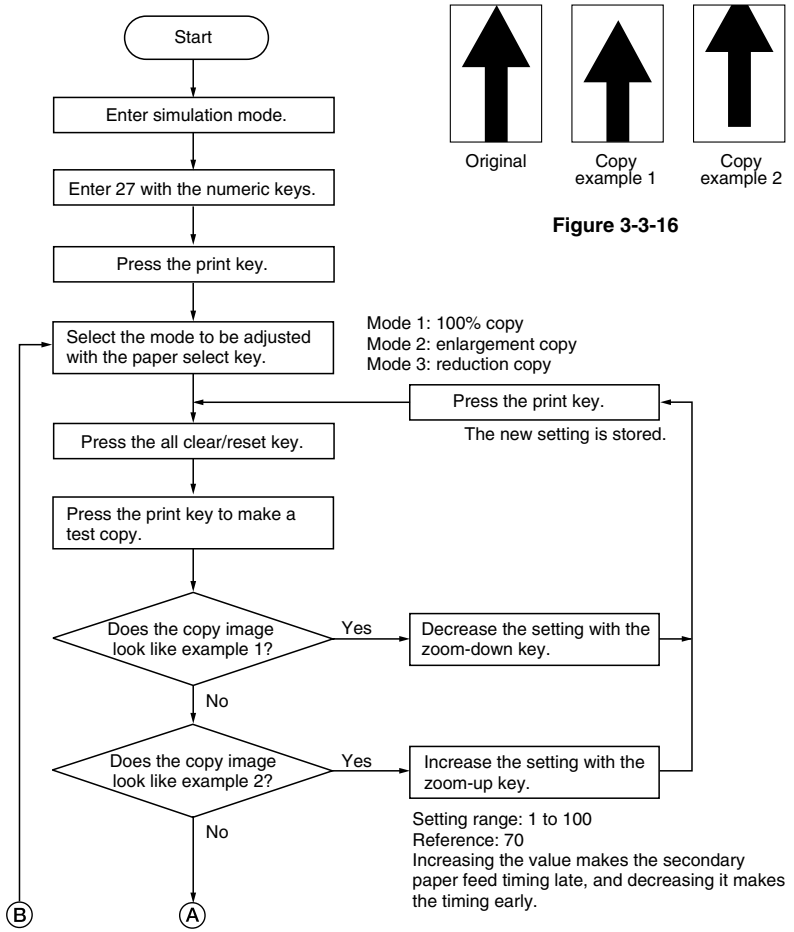
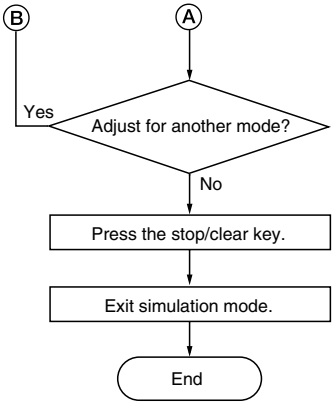

Start
Enter simulation mode.
Enter 27 with the numeric keys.
Press the print key.
Select the mode to be adjusted with the paper select key.
Mode 1: 100% copy
Mode 2: enlargement copy
Mode 3: reduction copy
Press the print key.
The new setting is stored.
Press the all clear/reset key.
Press the print key to make a test copy.
Does the copy image look like example 1?
Yes
Decrease the setting with the zoom-down key.
No
Does the copy image look like example 2?
Yes
Increase the setting with the zoom-up key.
No
Setting range: 1 to 100
Reference: 70
Increasing the value makes the secondary paper feed timing late, and decreasing it makes the timing early.
B
A
Original
Copy example 1
Copy example 2

Figure 3-3-16


B
A
Yes
Adjust for another mode?
No
Press the stop/clear key.
Exit simulation mode.
End

(8-2) Adjusting the leading edge margin

Adjust the leading edge margin as follows if it is not within the specified range.

Important: Before starting this adjustment, ensure (8-1) Adjusting the leading edge registration timing has been completed.

Procedure

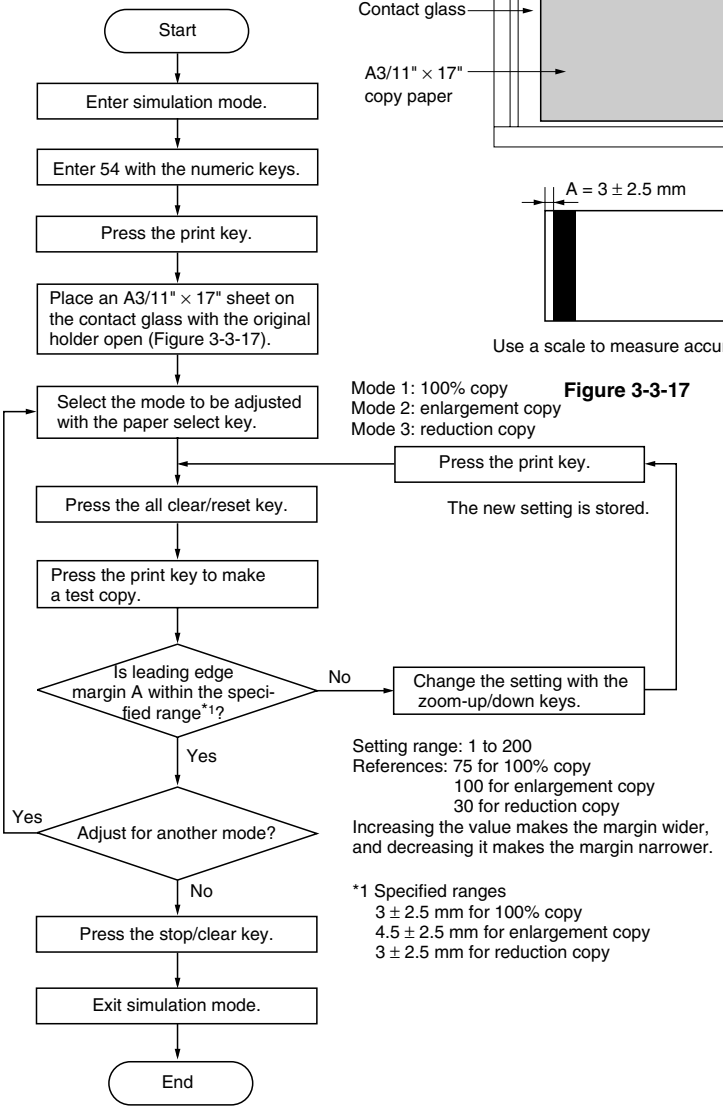

Start
Enter simulation mode.
Enter 54 with the numeric keys.
Press the print key.
Place an A3/11" × 17" sheet on the contact glass with the original holder open (Figure 3-3-17).
Select the mode to be adjusted with the paper select key.
Mode 1: 100% copy
Mode 2: enlargement copy
Mode 3: reduction copy
Press the print key.
The new setting is stored.
Press the all clear/reset key.
Press the print key to make a test copy.
Is leading edge margin A within the specified range*1?
No
Change the setting with the zoom-up/down keys.
Yes
Setting range: 1 to 200
References: 75 for 100% copy
100 for enlargement copy
30 for reduction copy
Increasing the value makes the margin wider, and decreasing it makes the margin narrower.
Yes
Adjust for another mode?
No
*1 Specified ranges
3 ± 2.5 mm for 100% copy
4.5 ± 2.5 mm for enlargement copy
3 ± 2.5 mm for reduction copy
Press the stop/clear key.
Exit simulation mode.
End
Contact glass
A3/11" × 17" copy paper
A = 3 ± 2.5 mm
Use a scale to measure accurately.

Figure 3-3-17

(8-3) Adjusting the trailing edge blank cut for 100% copy

Make the following adjustment if the trailing edge margin on a 100% copy image is not 0 mm.

Important: Before starting this adjustment, ensure (8-1) Adjusting the leading edge registration timing has been completed.

Procedure

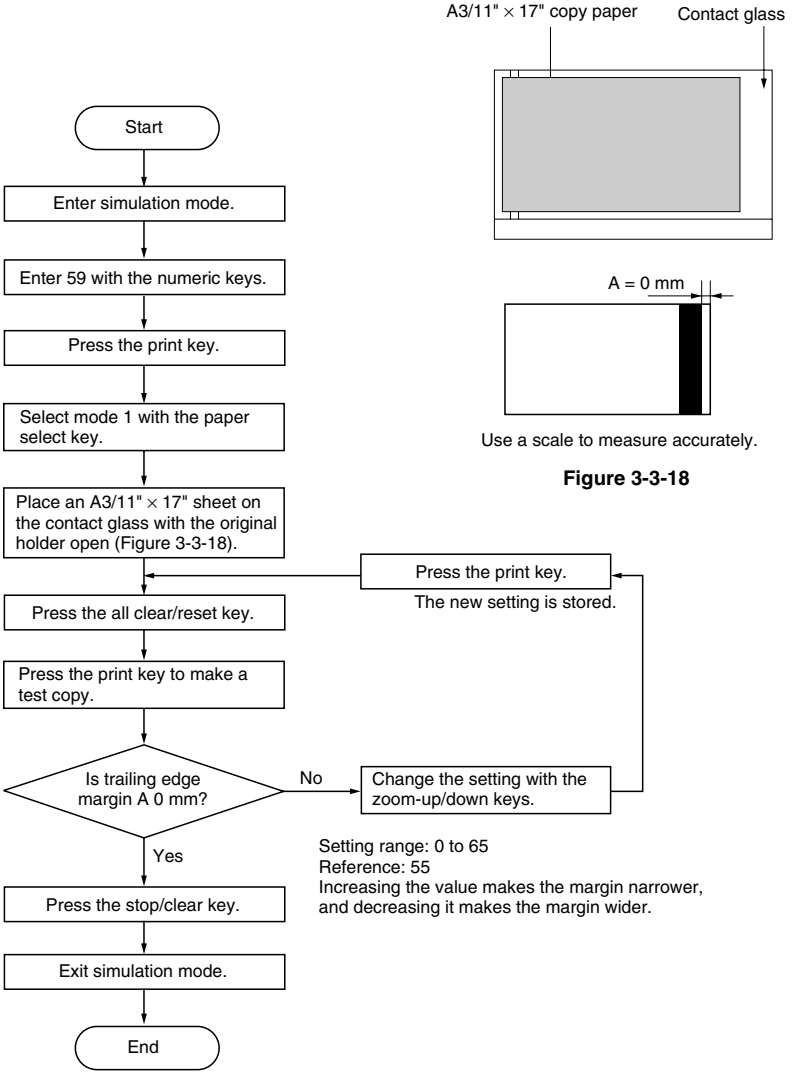

A3/11" × 17" copy paper
Contact glass
A = 0 mm
Use a scale to measure accurately.
Start
Enter simulation mode.
Enter 59 with the numeric keys.
Press the print key.
Select mode 1 with the paper select key.
Place an A3/11" × 17" sheet on the contact glass with the original holder open (Figure 3-3-18).
Press the print key.
The new setting is stored.
Press the all clear/reset key.
Press the print key to make a test copy.
Is trailing edge margin A 0 mm?
No
Change the setting with the zoom-up/down keys.
Yes
Setting range: 0 to 65
Reference: 55
Increasing the value makes the margin narrower, and decreasing it makes the margin wider.
Press the stop/clear key.
Exit simulation mode.
End

Figure 3-3-18

(8-4) Adjusting the trailing edge blank cut for reduction copy

Make the following adjustment if dirt on the original mat shows on the trailing edge of the reduction copy image.

Procedure

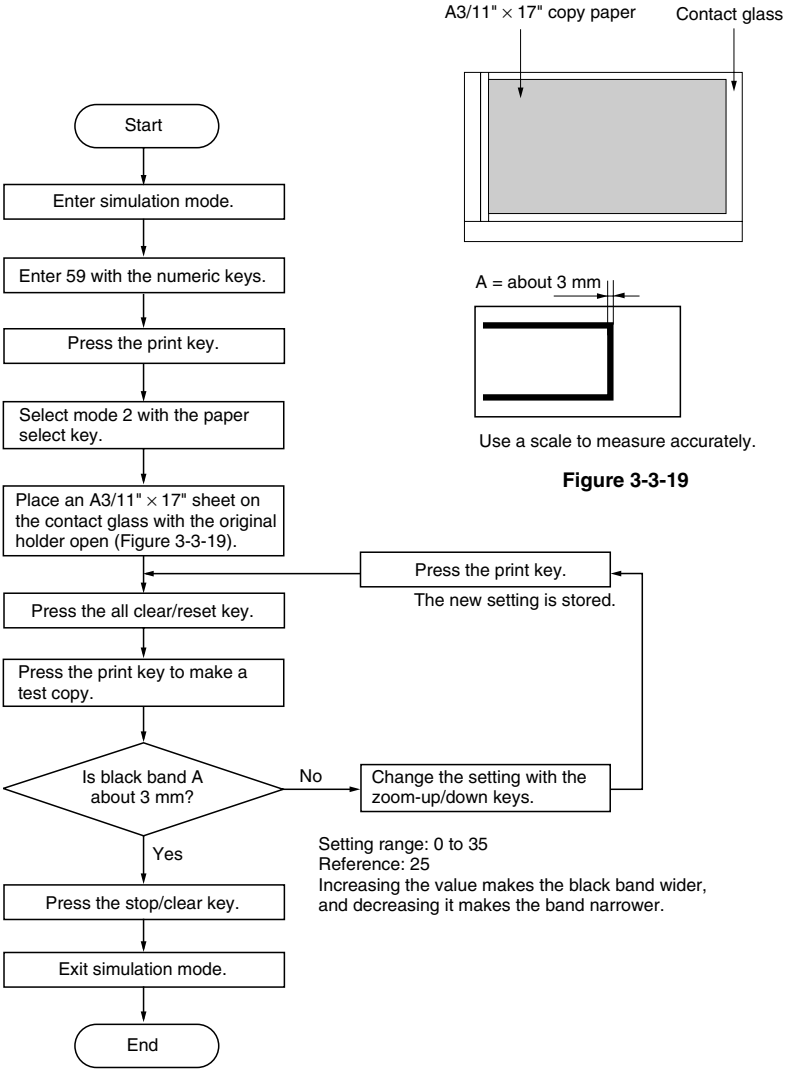

A3/11" × 17" copy paper
Contact glass
Start
Enter simulation mode.
Enter 59 with the numeric keys.
Press the print key.
Select mode 2 with the paper select key.
Place an A3/11" × 17" sheet on the contact glass with the original holder open (Figure 3-3-19).
Press the all clear/reset key.
Press the print key to make a test copy.
Is black band A about 3 mm?
No
Change the setting with the zoom-up/down keys.
Press the print key.
The new setting is stored.
Yes
Press the stop/clear key.
Exit simulation mode.
End
A = about 3 mm
Use a scale to measure accurately.
Setting range: 0 to 35
Reference: 25
Increasing the value makes the black band wider, and decreasing it makes the band narrower.

Figure 3-3-19

3-3-3 Main charging section

(1) Replacing the charger wire

Take the following procedure when the charger wire is broken or to be replaced.

Precautions

- Use the specified tungsten wire for the charger wire.
- The part of the wire wrapped around the charger spring must not protrude from the charger housing.
- The cut end of the charger wire must not protrude more than 2 mm from under the charger wire retainer pin.
- Use a clean, undamaged tungsten charger wire.
- Keep the charger wire taut by ensuring the charger spring is under tension.
- Clean the main charger shield first with a damp cloth and then with a dry cloth when replacing the charger wire.

Caution: Do not use organic solvents such as alcohol or thinner to clean the main charger shield.

Procedure

1. Open the front cover and take the image formation unit out of the copier.
2. Twist the main charger up and slide it toward the rear off the image formation unit.

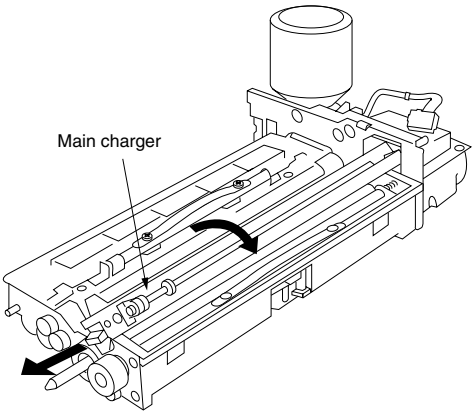


Figure 3-3-20 Detaching the main charger

3. Remove the screw and grid tension plate, then the main charger grid.
4. Remove the main charger front and rear lids.
5. Remove the charger wire retainer pin and charger spring, then the charger wire.

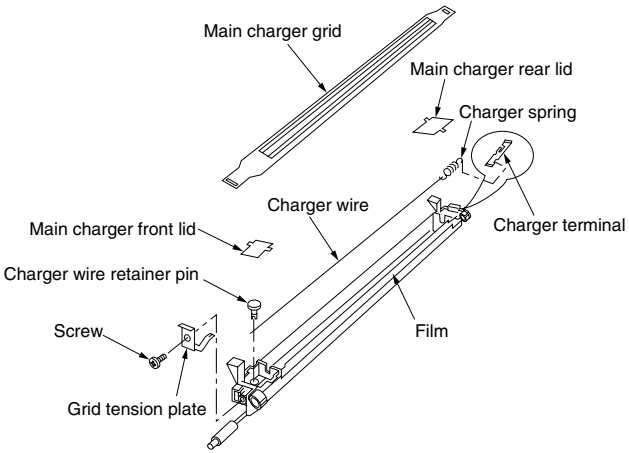


Figure 3-3-21 Removing the charger wire

6. Wind the new tungsten wire at least five turns around one end of the charger spring, and trim the end of the wire.
   • The length of the twists and the cut wire must be less than 2 mm.
7. Hook the other end of the charger spring to the charger terminal of the main charger rear housing.
8. Run the wire through the notch in the charger wire retainer pin and pull it tight so that the distance from the end of the charger spring to the notch in the main charger rear housing is between 2 and 4 mm.
9. Insert the retainer pin into the projection of the main charger front housing to fix the charger wire.
10. Cut off the excess wire under the retainer pin so less than 2 mm protrudes.

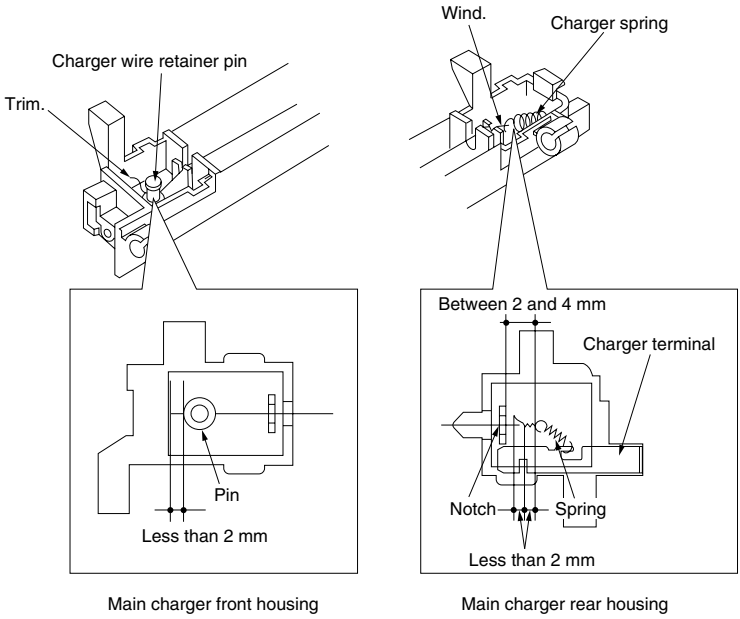


Figure 3-3-22 Replacing the charger wire

11. Refit the front and rear lids to the main charger.
12. Refit the main charger grid and grid tension plate.
    - When refitting the grid, ensure the marked side is facing up and the grid is not riding over the film.

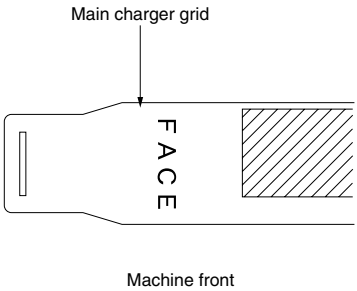


Figure 3-3-23

13. Refit all the removed parts.

3-3-4 Exposure section

(1) Detaching and refitting the halogen lamp

Clean or replace the halogen lamp as follows.

Procedure

1. Remove the contact glass.
2. Move light source unit 1 to the cutout in the upper rear frame.
3. Remove the halogen lamp by pressing its terminals at the front and rear of light source unit 1 outward.
   • When removing the lamp, touch only the ceramic parts.
4. Clean or replace the halogen lamp.
5. Refit all the removed parts.

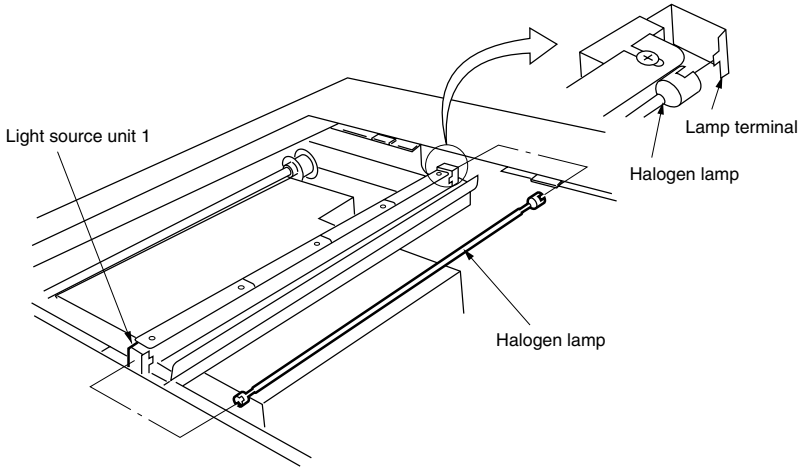


Figure 3-3-24 Detaching the halogen lamp

(2) Detaching and refitting the optical section thermostat

Caution: Use the specified thermostat for replacement. Do not substitute a simple wire or similar; otherwise, the copier will be seriously damaged.

Procedure

1. Remove the left cover.
2. Unplug the two 1-pin connectors of the optical section thermostat.
3. Remove the two screws and optical section thermostat.
4. Fit a new thermostat.
5. Refit all the removed parts.

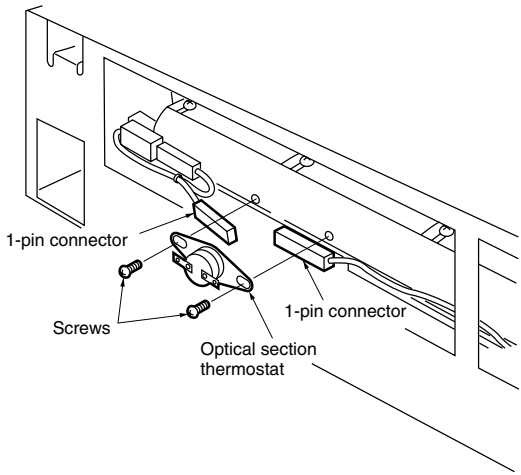


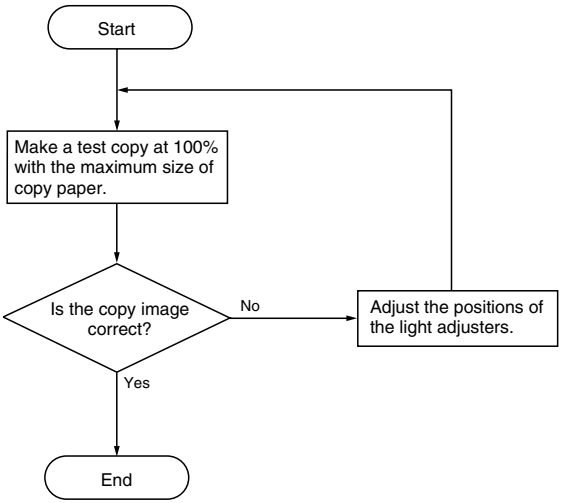
Figure 3-3-25 Detaching the optical section thermostat

(3) Adjusting the positions of the light adjusters

Perform the following adjustment after refitting or replacing the light adjusters, or if the copy image is abnormally light or dark on one side.

Before starting this adjustment, be sure that the main and transfer chargers, mirrors and dust filter are not stained with toner.

Procedure


Start
Make a test copy at 100% with the maximum size of copy paper.
Is the copy image correct?
No
Adjust the positions of the light adjusters.
Yes
End

- For example, if the copy image is not correct on the machine front, adjust the light adjuster on the machine rear.

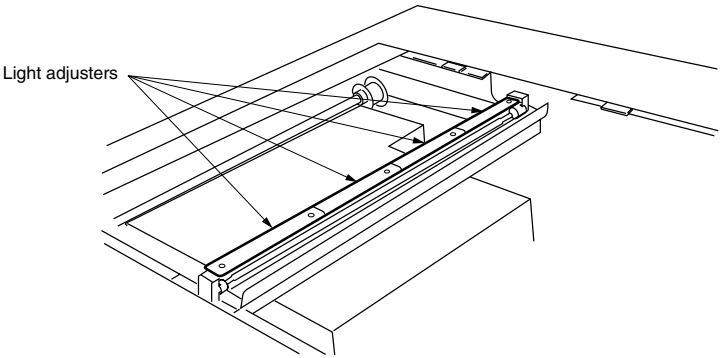


Figure 3-3-26 Adjusting the positions of the light adjusters

(4) Detaching and refitting the scanner wire

Take the following steps when a scanner wire is broken or to be replaced.

Important: After replacing a scanner wire, proceed to (5) Adjusting focus (lens unit).

(4-1) Detaching the scanner wires

Procedure

1. Remove the contact glass.
2. Move light source unit 1 to the center of the machine.
3. Remove each screw and retainer holding the scanner wires to light source unit 1.
4. Unhook the wire springs on one end of each scanner wire from their holders on the left.
5. Unhook the round terminals of each scanner wire from their holders on the right.
6. Remove the scanner wires and install new ones.

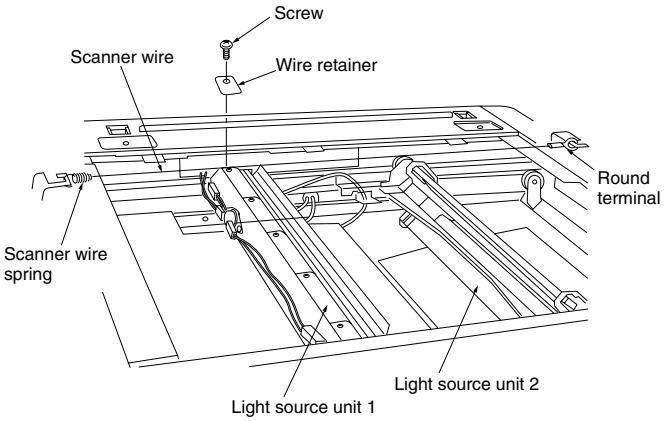


Figure 3-3-27 Detaching the scanner wires

(4-2) Installing the scanner wires

Required installation jig

- Scanner wire drum clips (P/N 34968130)

Procedure

The procedure is similar for both front and rear wires. The fitting of the rear wire is described here. Numbers in circles correspond with those in Figures 3-3-28 to 3-3-30.

1. Remove the contact glass and left cover.
2. Holding the scanner wire with the spring on the right side of the machine and the round terminal on the left, insert the ball into the hole in the scanner wire drum. ..... ①
3. Run the end with the spring of the scanner wire three times around the drum toward the machine inside. ..... ②
4. Run the other end of the wire with the round terminal three and a half times around the drum toward the machine outside. ..... ③
5. Hold the scanner wire in place with the scanner wire drum clip. ..... ④

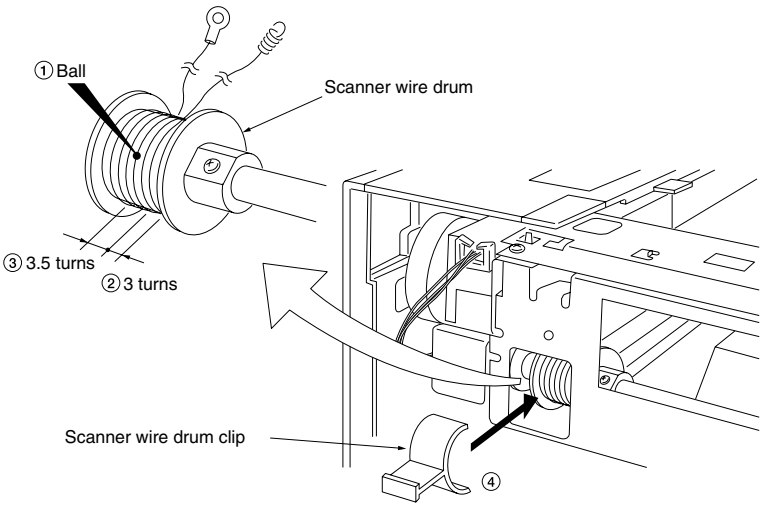


Figure 3-3-28 Winding a scanner wire

6. Run the end with the spring through the scanner wire holder on light source unit 1. ..... ⑤
7. Loop that end of the wire around the inner groove in the scanner wire pulley on light source unit 2 from bottom to top. ..... ⑥
8. Hook the wire spring to its holder on the left side of the machine. ..... ⑦
9. Loop the end with the round terminal around the scanner wire pulley on the right side of the machine from bottom to top. ..... ⑧
10. Loop that end of the wire around the outer groove in the scanner wire pulley on light source unit 2 from bottom to top. ..... ⑨
11. Hook the round terminal to its holder on the right side of the machine. ..... ⑩
12. Repeat steps 2 to 11 on the machine front.

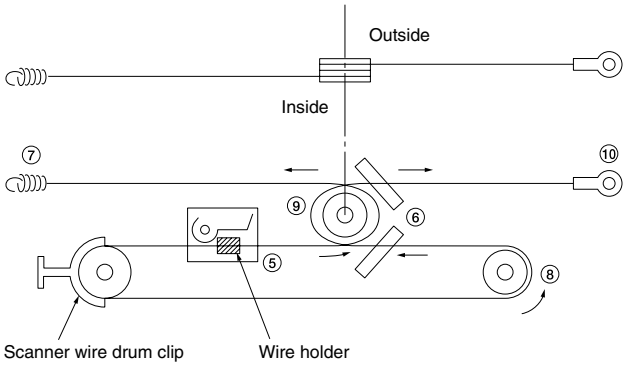


Figure 3-3-29 Installing a scanner wire

13. Remove the scanner wire drum clips.
14. Move light source unit 2 all the way toward the right. ..... ⑪
15. Move light source unit 1 all the way toward the right until it is stopped by unit 2. .. ⑫
16. Fasten the scanner wires to light source unit 1 with the wire retainers. ..... ⑬

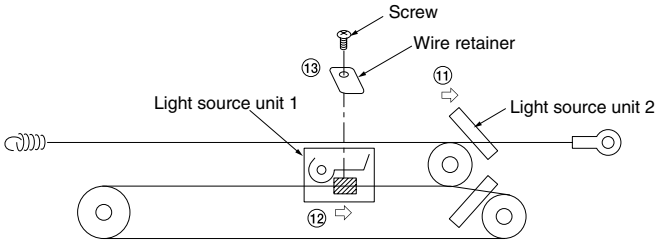
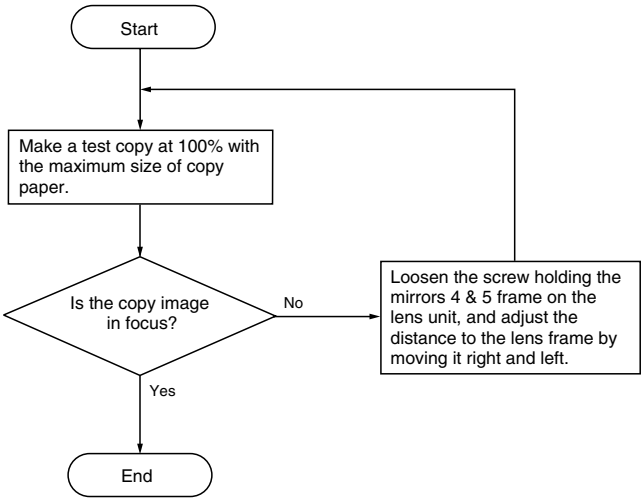


Figure 3-3-30 Fastening a scanner wire

(5) Adjusting focus (lens unit)

Make the following adjustment when the scanner wires are replaced, or if the entire copy image is out of focus.

Procedure


Start
Make a test copy at 100% with the maximum size of copy paper.
Is the copy image in focus?
No
Loosen the screw holding the mirrors 4 & 5 frame on the lens unit, and adjust the distance to the lens frame by moving it right and left.
Yes
End

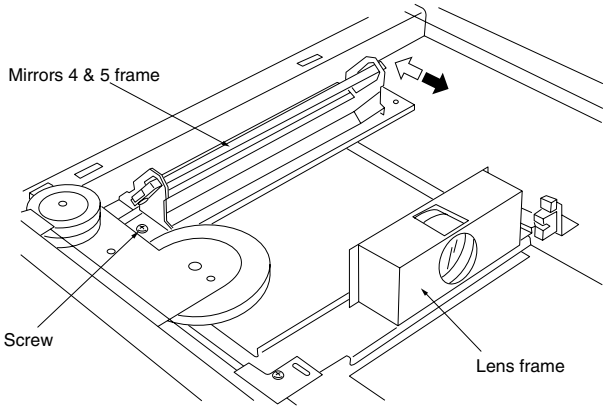


Figure 3-3-31 Adjusting focus

(6) Adjusting lateral image squareness (height of the mirrors 4 & 5 frame)
Make the following adjustment if the copy image is laterally skewed (lateral squareness is not obtained).

Procedure

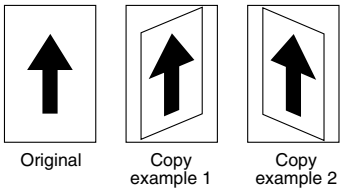
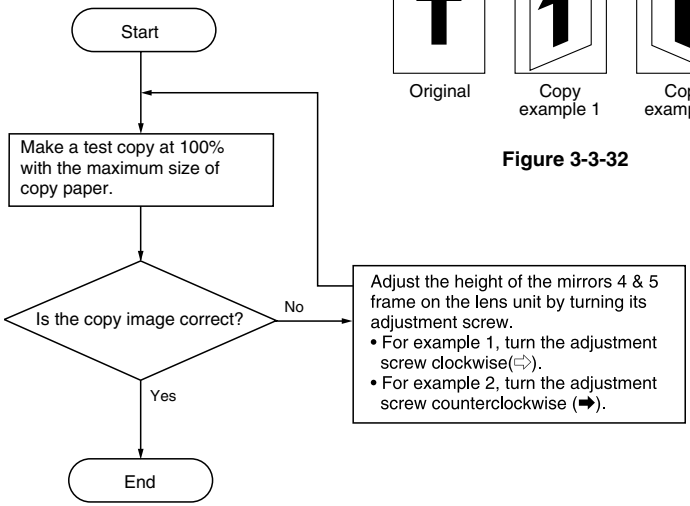


Figure 3-3-32


Start
Make a test copy at 100% with the maximum size of copy paper.
Is the copy image correct?
No
Yes
End
Adjust the height of the mirrors 4 & 5 frame on the lens unit by turning its adjustment screw.
• For example 1, turn the adjustment screw clockwise(⇨).
• For example 2, turn the adjustment screw counterclockwise (➡).

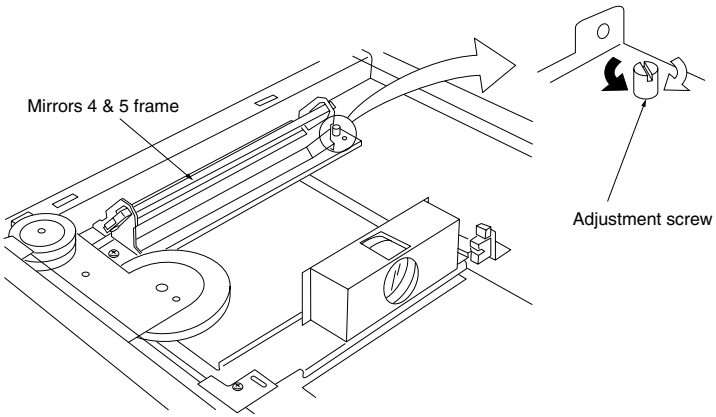


Figure 3-3-33 Adjusting lateral image squareness

(7) Adjusting longitudinal image squareness (height of mirror 2)

Make the following adjustment after replacing the scanner wires, or if the copy image is longitudinally skewed (longitudinal squareness is not obtained).

Important: To adjust longitudinal image squareness, first adjust the levelling bolts and, if the problem persists, only then adjust the height of mirror 2.

Procedure

• Adjusting the levelling bolts

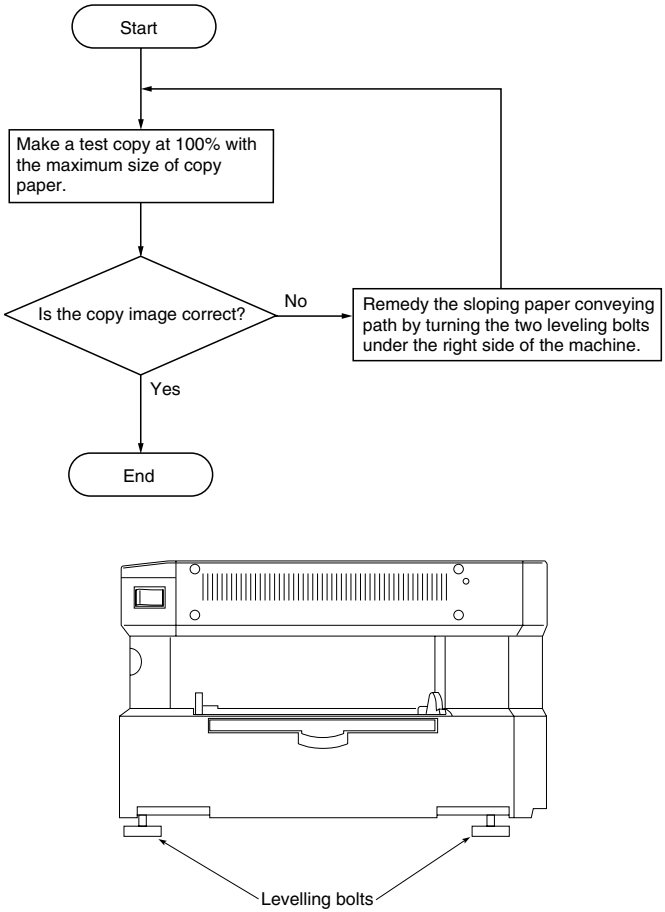

Start
Make a test copy at 100% with the maximum size of copy paper.
Is the copy image correct?
No
Remedy the sloping paper conveying path by turning the two leveling bolts under the right side of the machine.
Yes
End
Levelling bolts

Figure 3-3-34 Adjusting the levelling bolts

• Adjusting the height of mirror 2

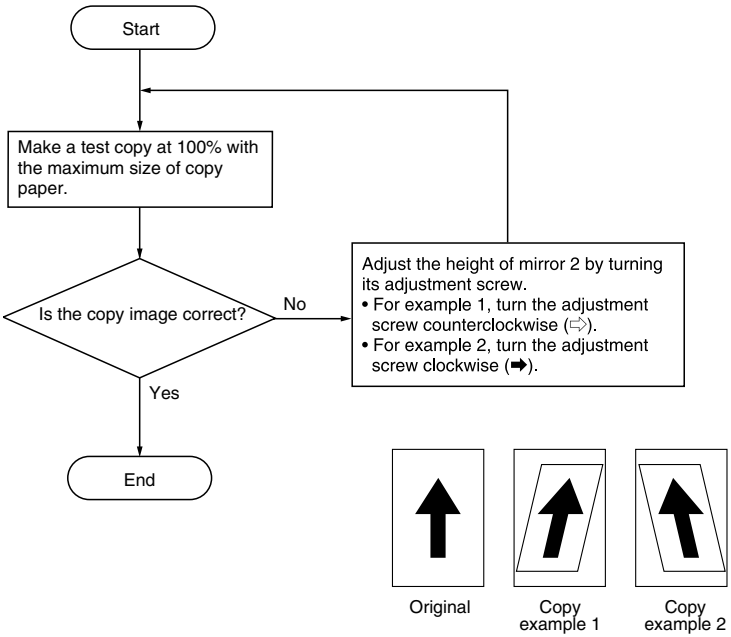

Start
Make a test copy at 100% with the maximum size of copy paper.
Is the copy image correct?
No
Adjust the height of mirror 2 by turning its adjustment screw.
• For example 1, turn the adjustment screw counterclockwise (⇨).
• For example 2, turn the adjustment screw clockwise (➡).
Yes
End
Original
Copy example 1
Copy example 2

Figure 3-3-35

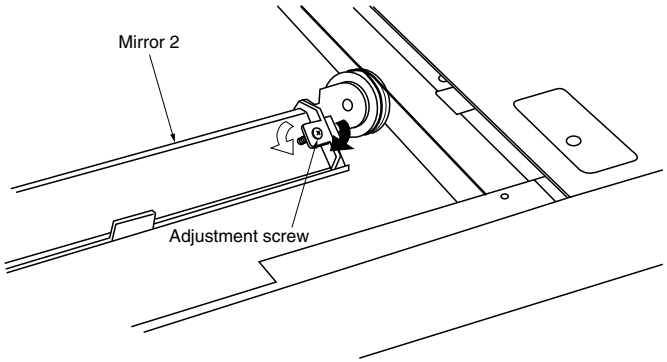


Figure 3-3-36 Adjusting the height of mirror 2

(8) Setting the exposure amount

Perform the following adjustment when the drum is replaced.

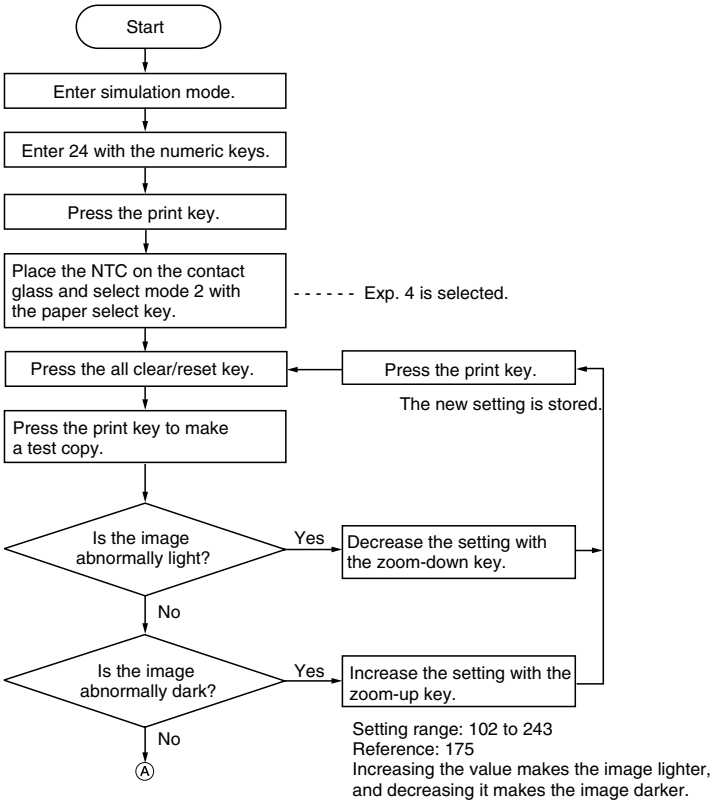
Reference: This procedure adjusts the exposure gradient for both normal and photo modes.

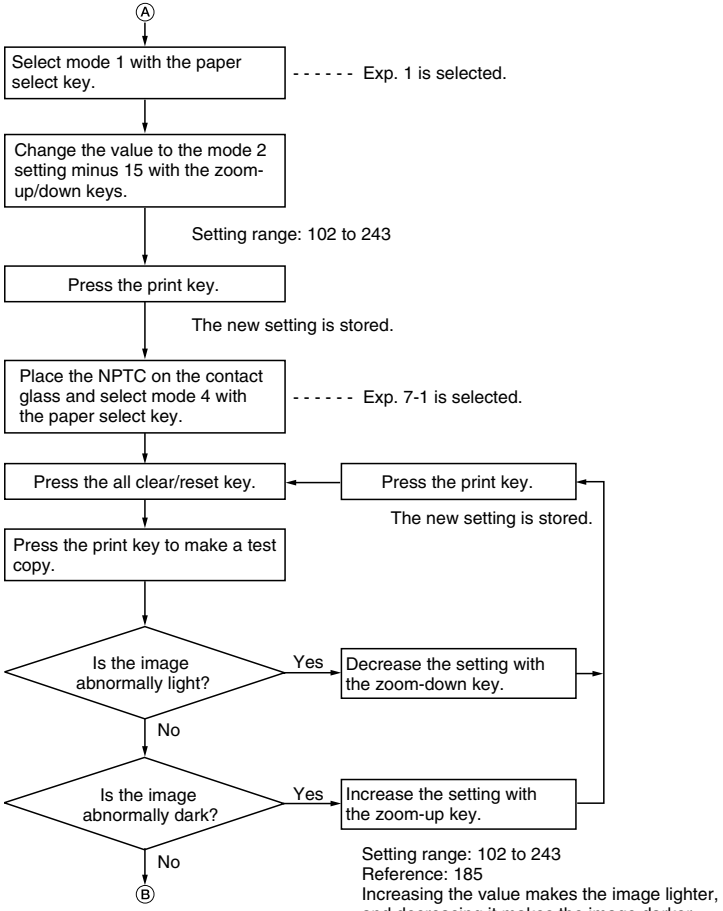
Precautions

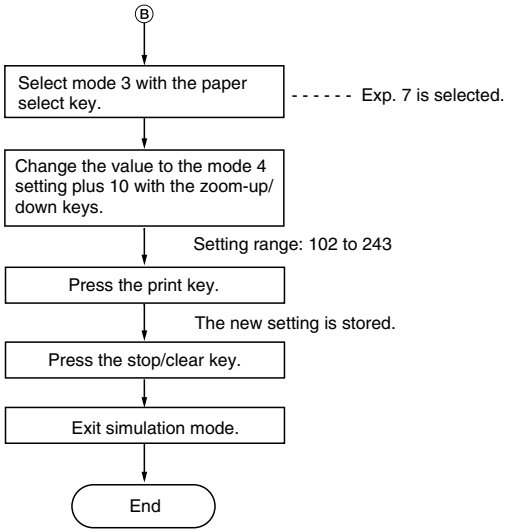
- Check that the developer density is correct.
- Check that the halogen lamp has not deteriorated.
- Clean the optical system.
- Never touch controls VR601, VR602 and VR603 on the composite PCB.

(8-1) Setting the manual-mode exposure amount

Procedure

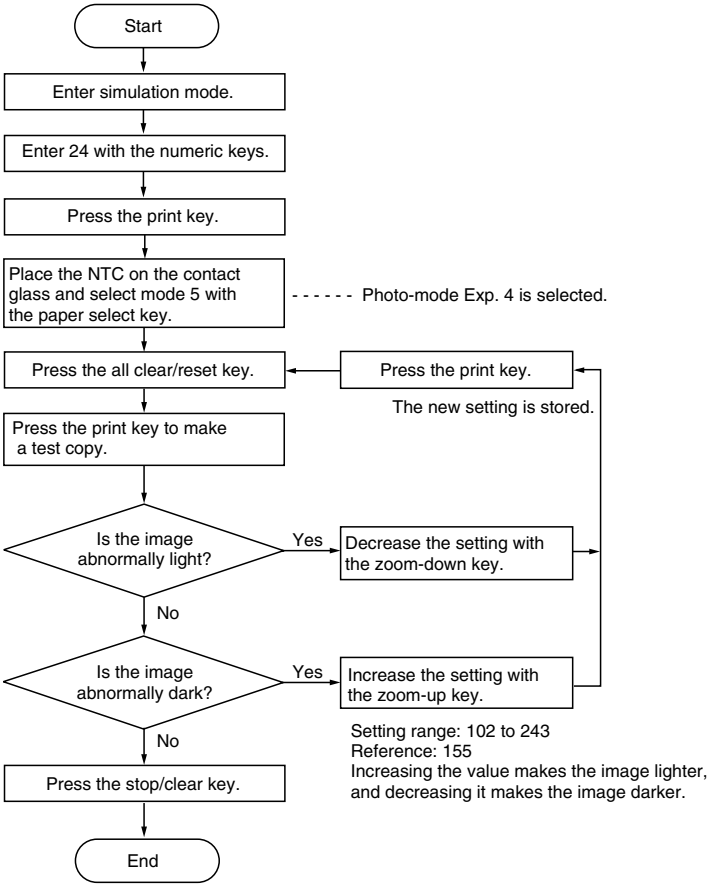

Start
Enter simulation mode.
Enter 24 with the numeric keys.
Press the print key.
Place the NTC on the contact glass and select mode 2 with the paper select key.
Exp. 4 is selected.
Press the all clear/reset key.
Press the print key.
The new setting is stored.
Press the print key to make a test copy.
Is the image abnormally light?
Yes
Decrease the setting with the zoom-down key.
No
Is the image abnormally dark?
Yes
Increase the setting with the zoom-up key.
No
A
Setting range: 102 to 243
Reference: 175
Increasing the value makes the image lighter, and decreasing it makes the image darker.


A
Select mode 1 with the paper select key.
------ Exp. 1 is selected.
Change the value to the mode 2 setting minus 15 with the zoom-up/down keys.
Setting range: 102 to 243
Press the print key.
The new setting is stored.
Place the NPTC on the contact glass and select mode 4 with the paper select key.
------ Exp. 7-1 is selected.
Press the all clear/reset key.
Press the print key.
The new setting is stored.
Press the print key to make a test copy.
Is the image abnormally light?
Yes
Decrease the setting with the zoom-down key.
No
Is the image abnormally dark?
Yes
Increase the setting with the zoom-up key.
No
B
Setting range: 102 to 243
Reference: 185
Increasing the value makes the image lighter, and decreasing it makes the image darker.


Ⓑ
Select mode 3 with the paper select key.
------ Exp. 7 is selected.
Change the value to the mode 4 setting plus 10 with the zoom-up/ down keys.
Setting range: 102 to 243
Press the print key.
The new setting is stored.
Press the stop/clear key.
Exit simulation mode.
End

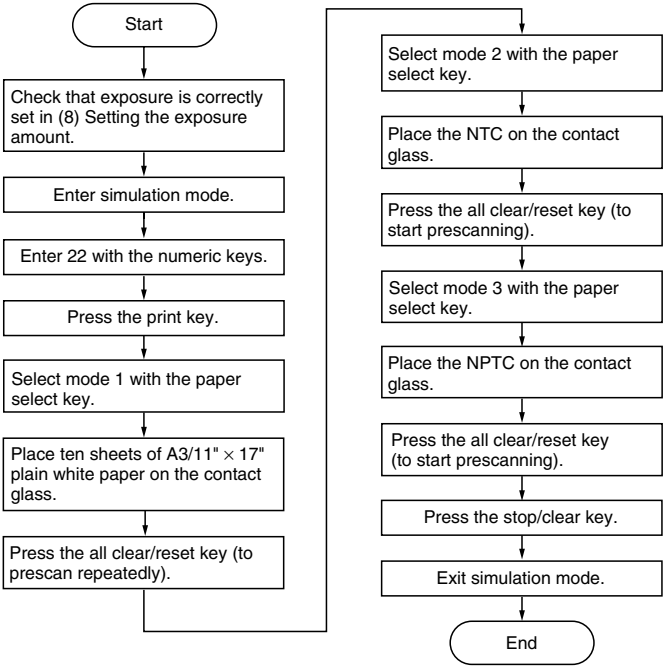
(8-2) Setting the photo-mode exposure amount

Procedure


Start
Enter simulation mode.
Enter 24 with the numeric keys.
Press the print key.
Place the NTC on the contact glass and select mode 5 with the paper select key.
Photo-mode Exp. 4 is selected.
Press the all clear/reset key.
Press the print key.
The new setting is stored.
Press the print key to make a test copy.
Is the image abnormally light?
Yes
Decrease the setting with the zoom-down key.
No
Is the image abnormally dark?
Yes
Increase the setting with the zoom-up key.
No
Press the stop/clear key.
End
Setting range: 102 to 243
Reference: 155
Increasing the value makes the image lighter, and decreasing it makes the image darker.

(9) Adjusting the auto exposure (AE sensor) reference value

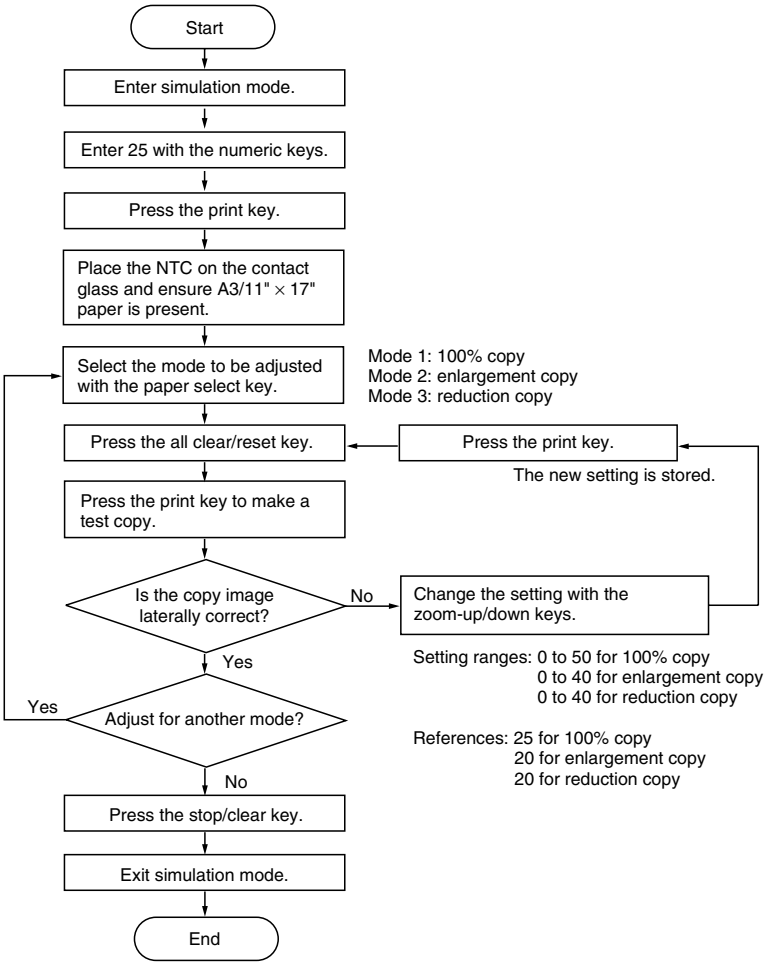
Procedure


Start
Check that exposure is correctly set in (8) Setting the exposure amount.
Enter simulation mode.
Enter 22 with the numeric keys.
Press the print key.
Select mode 1 with the paper select key.
Place ten sheets of A3/11" × 17" plain white paper on the contact glass.
Press the all clear/reset key (to prescan repeatedly).
Select mode 2 with the paper select key.
Place the NTC on the contact glass.
Press the all clear/reset key (to start prescanning).
Select mode 3 with the paper select key.
Place the NPTC on the contact glass.
Press the all clear/reset key (to start prescanning).
Press the stop/clear key.
Exit simulation mode.
End

(10) Adjusting lateral magnification (correcting the lens position)

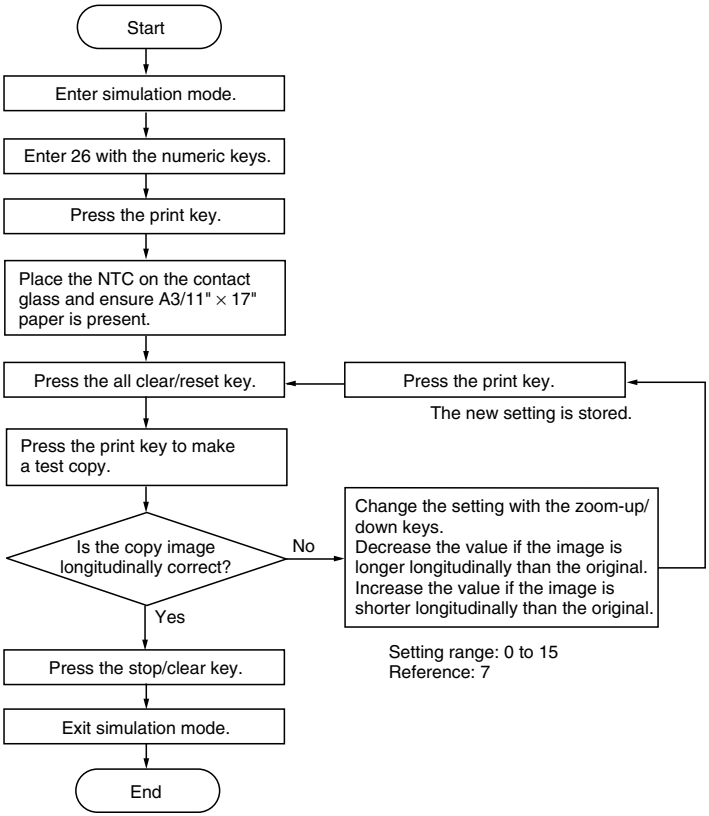
Make the following adjustment after replacing the lens unit, or if the lateral magnification is not correct.

Procedure


Start
Enter simulation mode.
Enter 25 with the numeric keys.
Press the print key.
Place the NTC on the contact glass and ensure A3/11" × 17" paper is present.
Select the mode to be adjusted with the paper select key.
Mode 1: 100% copy
Mode 2: enlargement copy
Mode 3: reduction copy
Press the all clear/reset key.
Press the print key.
The new setting is stored.
Press the print key to make a test copy.
Is the copy image laterally correct?
No
Change the setting with the zoom-up/down keys.
Setting ranges: 0 to 50 for 100% copy
0 to 40 for enlargement copy
0 to 40 for reduction copy
References: 25 for 100% copy
20 for enlargement copy
20 for reduction copy
Yes
Adjust for another mode?
Yes
No
Press the stop/clear key.
Exit simulation mode.
End

(11) Adjusting longitudinal magnification (scanning speed)

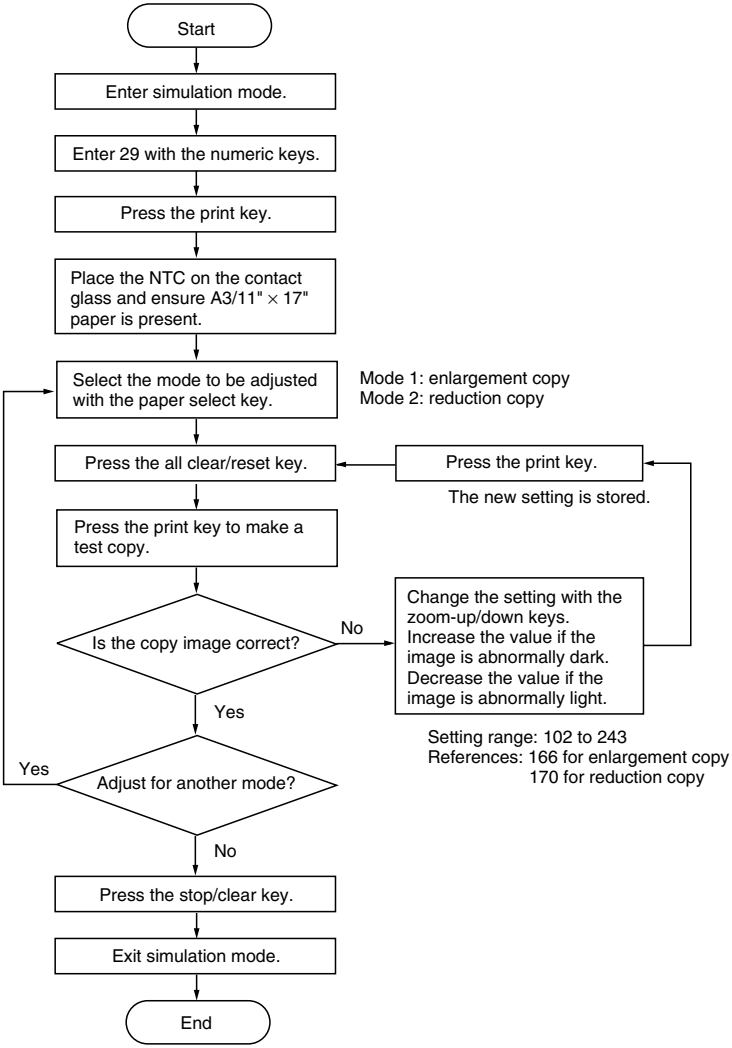
Procedure


Start
Enter simulation mode.
Enter 26 with the numeric keys.
Press the print key.
Place the NTC on the contact glass and ensure A3/11" × 17" paper is present.
Press the all clear/reset key.
Press the print key.
The new setting is stored.
Press the print key to make a test copy.
Is the copy image longitudinally correct?
No
Change the setting with the zoom-up/down keys.
Decrease the value if the image is longer longitudinally than the original.
Increase the value if the image is shorter longitudinally than the original.
Setting range: 0 to 15
Reference: 7
Yes
Press the stop/clear key.
Exit simulation mode.
End

(12) Adjusting exposure amount for enlargement/reduction mode

Make the following adjustment after (8) Setting the exposure amount has been completed.

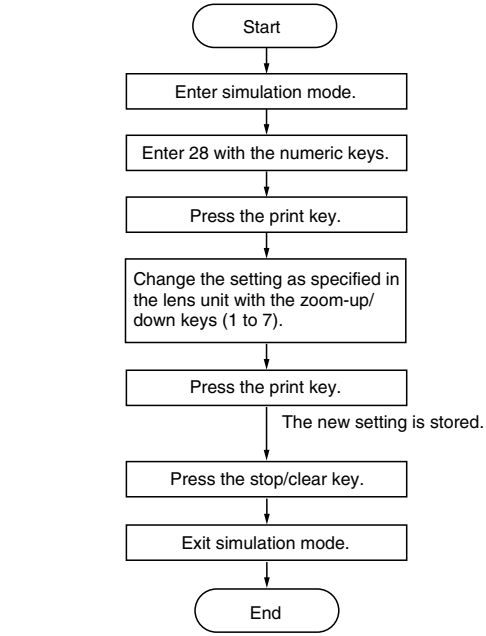
Procedure


Start
Enter simulation mode.
Enter 29 with the numeric keys.
Press the print key.
Place the NTC on the contact glass and ensure A3/11" × 17" paper is present.
Select the mode to be adjusted with the paper select key.
Mode 1: enlargement copy
Mode 2: reduction copy
Press the all clear/reset key.
Press the print key.
The new setting is stored.
Press the print key to make a test copy.
Is the copy image correct?
No
Change the setting with the zoom-up/down keys.
Increase the value if the image is abnormally dark.
Decrease the value if the image is abnormally light.
Setting range: 102 to 243
References: 166 for enlargement copy
170 for reduction copy
Yes
Yes
Adjust for another mode?
No
Press the stop/clear key.
Exit simulation mode.
End

(13) Setting the lens unit rank

Make the following adjustment after replacing the main PCB or the lens unit.
The lens unit is classified into seven ranks according to the focal distance of the lens unit.
The adjustment is necessary to obtain correct enlargement and reduction ratios.

Procedure


Start
Enter simulation mode.
Enter 28 with the numeric keys.
Press the print key.
Change the setting as specified in the lens unit with the zoom-up/ down keys (1 to 7).
Press the print key.
The new setting is stored.
Press the stop/clear key.
Exit simulation mode.
End

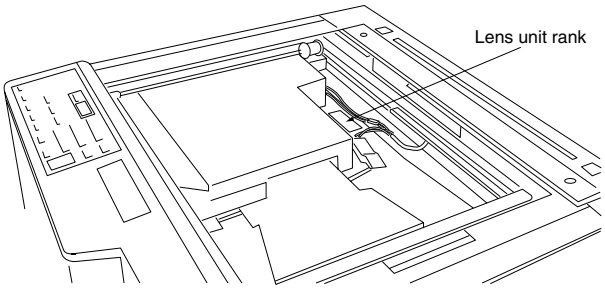
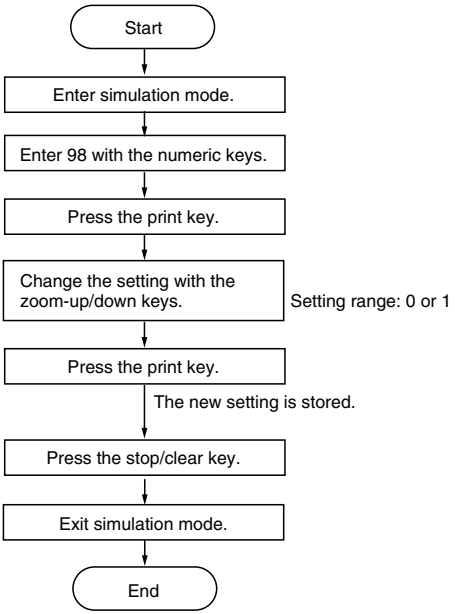


Figure 3-3-37

(14) Setting the optical section fan motor control

Make the following adjustment when the mirrors and other optical components are unusually prone to dust due to environmental reasons, causing a background to appear on the copy image.

Procedure



- If 0 is selected, the optical section fan motor is under normal control.
- If 1 is selected, the optical section fan motor operates as follows:
  T: time from the previous copying cycle to the next copying cycle (min.)
  N: the number of papers fed during the next copying cycle
  While N < 2T, the motor does not operate.
  When N = 2T (or 20), the motor turns on.
  For example, if continuous copying is started with the number of copies preset to 15 when T is 5 minutes, the optical section fan motor turns on when N reaches 10.

3-3-5 Drum section

(1) Replacing the drum

Perform the following steps when cleaning or replacing the drum.

Precautions

- Avoid direct sunlight and strong light when detaching and refitting the drum.
- Hold the drum at the ends and never touch the drum surface.
- After removing the drum, keep it in the drum case or storage bag to protect the surface from light.

Procedure

1. Open the copier front cover.
2. Remove the 12-pin plug of the image formation unit.
3. Turn the paper conveying section lever down.

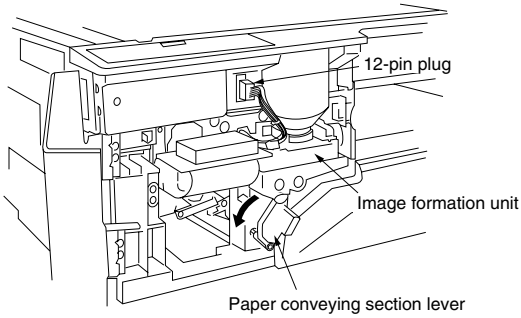


Figure 3-3-38

4. Slide the image formation unit lever toward the left and, holding the front part of the unit and the unit's handle, pull the unit level out of the machine.
   • Do not touch the drum separation claws when holding the image formation unit.

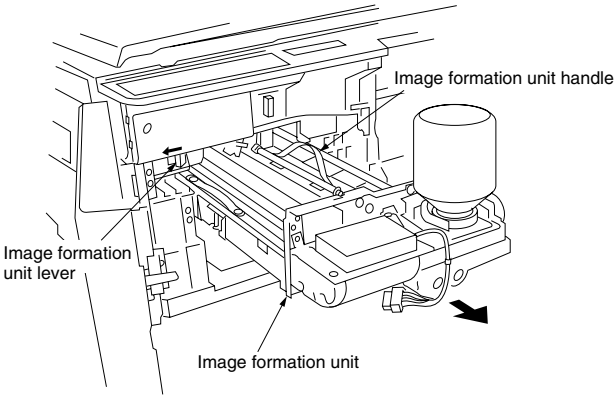


Figure 3-3-39 Removing the image formation unit

5. Push up the blade mount and slide the blade lever toward the machine rear to lock the cleaning blade away from the drum.

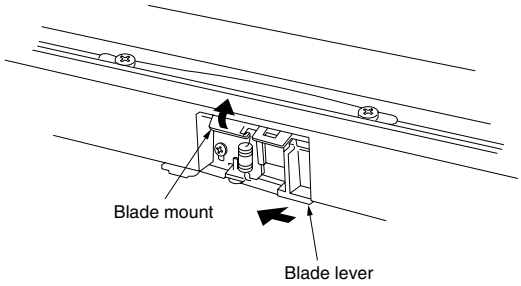


Figure 3-3-40

6. Detach the main charger from the image formation unit.
7. Pull the drum shaft out of the rear of the drum.
8. Holding both ends, detach the drum from the image formation unit.

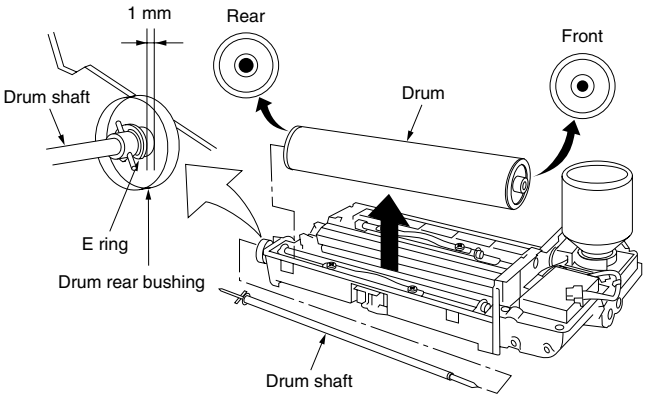


Figure 3-3-41 Detaching the drum

9. Fit the new drum.
   - Orient the drum correctly, with the thin shaft hole on the machine front and the thick shaft hole on the machine rear.
10. Push the drum shaft into the rear of the drum and, while turning the shaft, insert it fully into the drum.
    - Ensure there is a clearance of about 1 mm between the E ring on the drum shaft and the drum rear bushing.
11. Refit the main charger to the image formation unit.
12. Refit the image formation unit to the copier and close the front cover.
13. Set the exposure amount (see page 3-3-30).

(2) Cleaning the drum

Clean the drum as follows when an image problem occurs, or if the drum is dirty.

Precautions

- Avoid direct sunlight and strong light when cleaning the drum.
- Dust in the air and from the cleaning pad may damage the drum during operation. Avoid working in dusty place.
- Clean the drum entirely even if it is only dirty locally.
- Do not clean the drum with alcohol, thinner or other organic solvent.

Required supplies

- Polishing cloth: specified synthetic cotton
- Toner

Procedure

1. Detach the drum (see page 3-3-40).
2. Apply a polishing cloth to the drum and gently wipe the drum taking care not to damage the surface.
3. Apply toner to another cloth and wipe the drum surface with it in the same manner.
4. Refit the drum.
5. Refit all the removed parts and let the copier stand for 30 minutes.
6. Make a test copy and check the image.

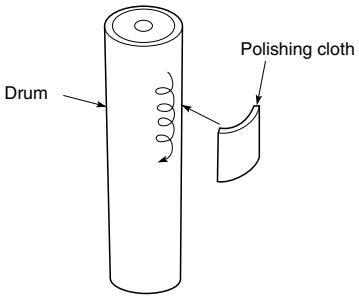
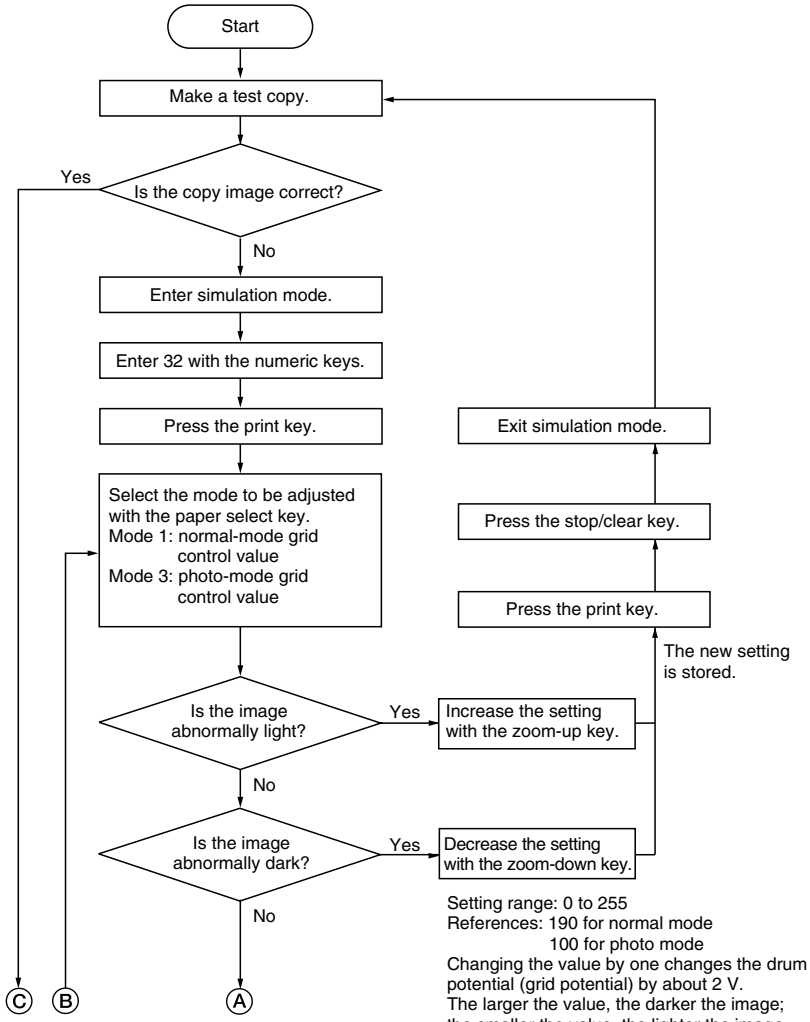
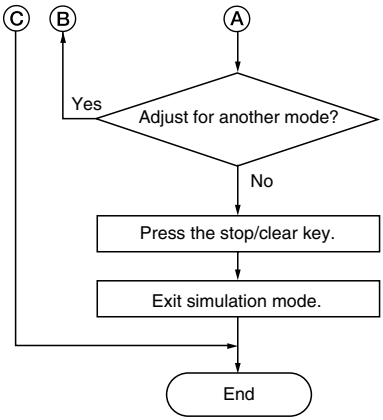


Figure 3-3-42 Cleaning the drum

(3) Adjusting the copy image after drum replacement (reference)
Perform the following adjustment if the copy image density is still incorrect after making other adjustments.
Caution: Do not change the settings for modes 2 and 4 in simulation 32.

Procedure


Start
Make a test copy.
Is the copy image correct?
Yes
No
Enter simulation mode.
Enter 32 with the numeric keys.
Press the print key.
Select the mode to be adjusted with the paper select key.
Mode 1: normal-mode grid control value
Mode 3: photo-mode grid control value
Is the image abnormally light?
Yes
Increase the setting with the zoom-up key.
No
Is the image abnormally dark?
Yes
Decrease the setting with the zoom-down key.
No
C
B
A
Exit simulation mode.
Press the stop/clear key.
Press the print key.
The new setting is stored.
Setting range: 0 to 255
References: 190 for normal mode
100 for photo mode
Changing the value by one changes the drum potential (grid potential) by about 2 V.
The larger the value, the darker the image; the smaller the value, the lighter the image.


C
B
A
Yes
Adjust for another mode?
No
Press the stop/clear key.
Exit simulation mode.
End

3-3-6 Developing section

(1) Adjusting the position of the magnetic brush (developing roller) (reference)

Check or adjust the position of the magnetic brush if the image is abnormally light.

Important: Before starting this adjustment, ensure that the doctor blade is installed correctly and that the correct amount of developer is present.

Procedure

1. Take the image formation unit out of the copier.
2. Remove the 1-pin developing bias connector from the magnet roller retainer on the back of the developing unit.
3. Loosen the screw holding the magnet roller retainer.
4. Adjust the magnet roller retainer right and left until the distance between the top of the magnetic brush and the bottom of the developing unit housing is 18 mm (reference), using a scale for accurate measurement.
   - If the distance is smaller than the specified value, carrier appears on the copy image. If it is larger, a background appears.
5. After adjustment, make a test copy to check for performance.

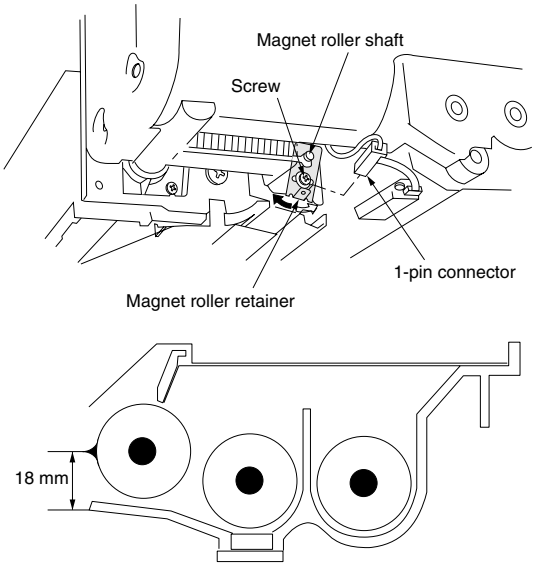


Figure 3-3-43 Adjusting the position of the magnetic brush

(2) Adjusting the position of the doctor blade (reference)
Make the following adjustment if carrier or background appears on the copy image.

Procedure

1. Take the image formation unit out of the copier.
2. Remove the two screws and the developing unit upper cover.

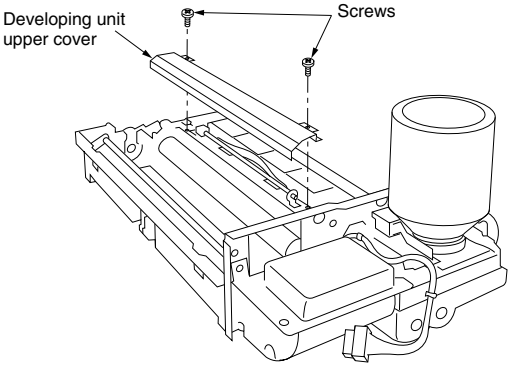


Figure 3-3-44

3. Adjust the distance between the doctor blade and the developing roller using thickness gauges at the three points indicated by the arrows in the diagram. Turn the three adjustment screws until the 0.55-mm gauge goes into the gap at each point and the 0.65-mm one does not.
   • The smaller the distance, the lighter the image; the larger the distance, the darker the image.

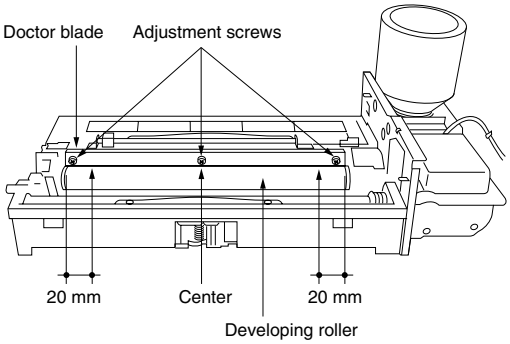


Figure 3-3-45

(3) Adjusting developing bias voltage (reference)

The developing bias voltage is factory-adjusted. Only perform the following adjustment when carrier or background appears on the copy image after control VR202 on the high-voltage transformer PCB has been turned accidentally.

Required adjustment tool

• Tester

Procedure

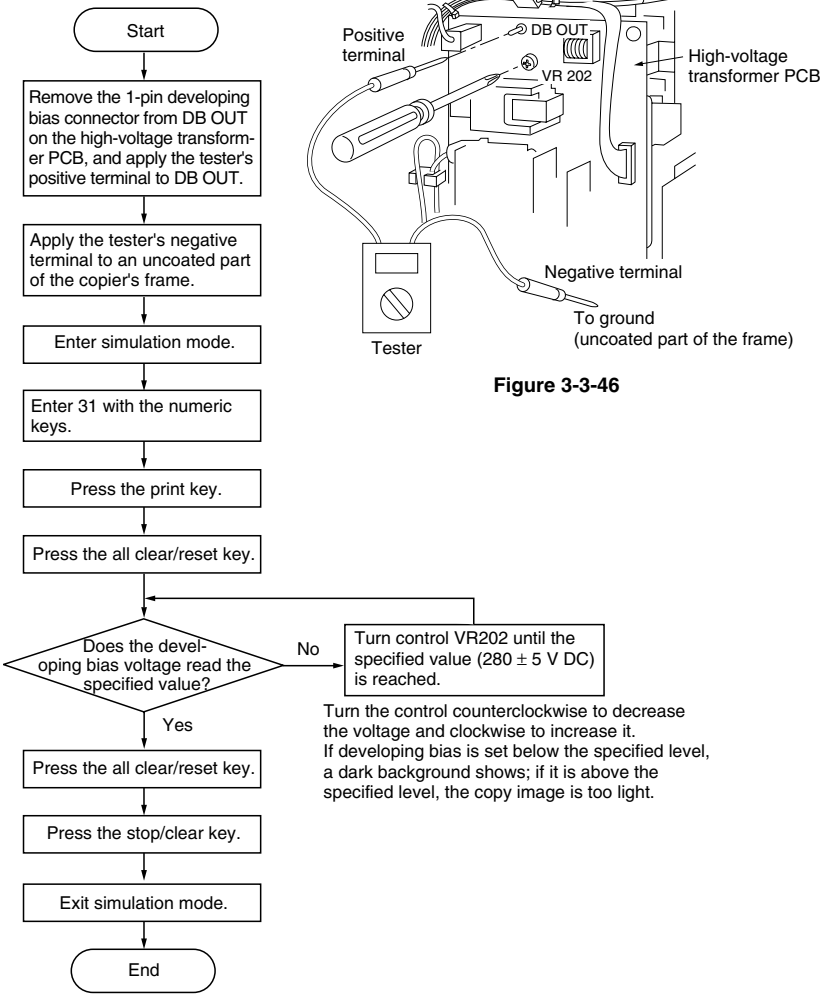

Start
Remove the 1-pin developing bias connector from DB OUT on the high-voltage transformer PCB, and apply the tester's positive terminal to DB OUT.
Apply the tester's negative terminal to an uncoated part of the copier's frame.
Enter simulation mode.
Enter 31 with the numeric keys.
Press the print key.
Press the all clear/reset key.
Does the developing bias voltage read the specified value?
No
Turn control VR202 until the specified value (280 ± 5 V DC) is reached.
Turn the control counterclockwise to decrease the voltage and clockwise to increase it.
If developing bias is set below the specified level, a dark background shows; if it is above the specified level, the copy image is too light.
Yes
Press the all clear/reset key.
Press the stop/clear key.
Exit simulation mode.
End
1-pin connector
Positive terminal
DB OUT
VR 202
High-voltage transformer PCB
Negative terminal
To ground
(uncoated part of the frame)
Tester

Figure 3-3-46

3-3-7 Transfer and separation section

(1) Replacing the charger wires

Take the following steps when the transfer or separation charger wire is broken or is to be replaced.

Precautions

- Use the specified tungsten wire for the charger wire.
- The part of the wire wrapped around the charger spring must not protrude from the charger housing.
- The cut end of the charger wire must not protrude more than 2 mm from under the charger wire retainer pin.
- Use a clean, undamaged tungsten charger wire.
- Keep the charger wire taut by ensuring the charger spring is under tension.
- Clean the charger shield when replacing the charger wire.

Procedure

1. Open the front cover and turn the paper conveying section lever down.
2. Take the image formation unit out of the copier.
3. Remove the screw and transfer charger stopper.
4. Pull the front part of the transfer charger and, slightly lifting it, take the transfer charger out of the copier.
   - When refitting the transfer charger, ensure the claws on the transfer charger rear housing is engaged with the claws inside the machine.

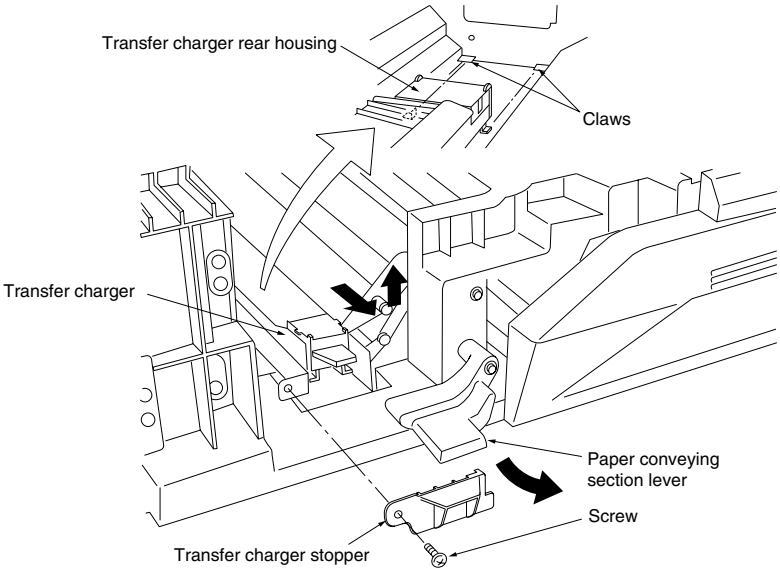


Figure 3-3-47 Detaching the transfer charger

5. Remove the separation guide and transfer charger front and rear lids.
6. Remove the charger wire retainer pins, charger springs and then the charger wires.

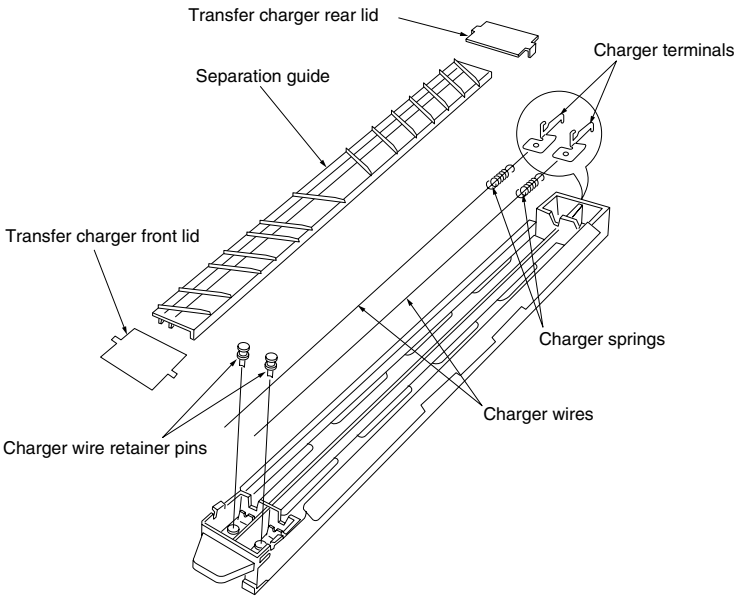


Figure 3-3-48 Removing the charger wires

7. Wind the new tungsten wires at least five turns around one end of the charger springs, and trim the end of each wire.
   • The length of the twists and the cut wire must be less than 2 mm.
8. Hook the other ends of the charger springs to the charger terminals of the transfer charger rear housing.
9. Run each wire through the notch in the charger wire retainer pin and pull it tight so that the charger spring stretches to between 9.5 and 11 mm.
10. Insert the retainer pins into the projections of the transfer charger front housing to fix the charger wires.
11. Cut off the excess wire under each retainer pin so less than 2 mm protrudes.
12. Refit all the removed parts.

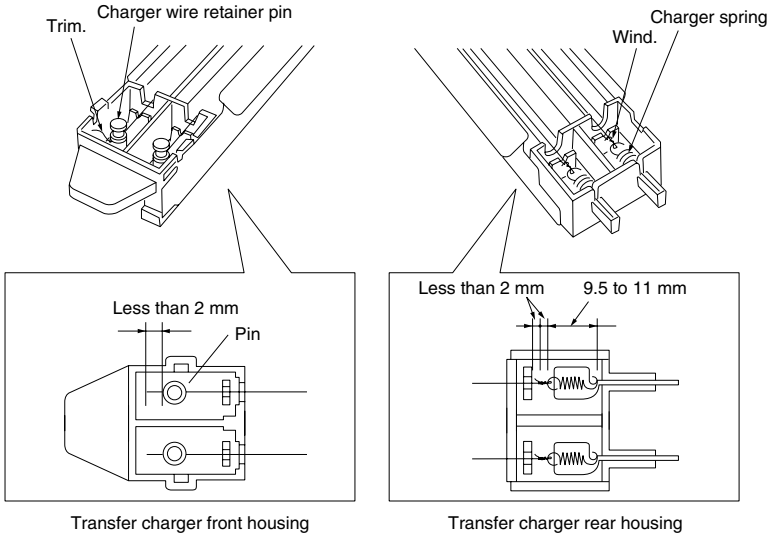
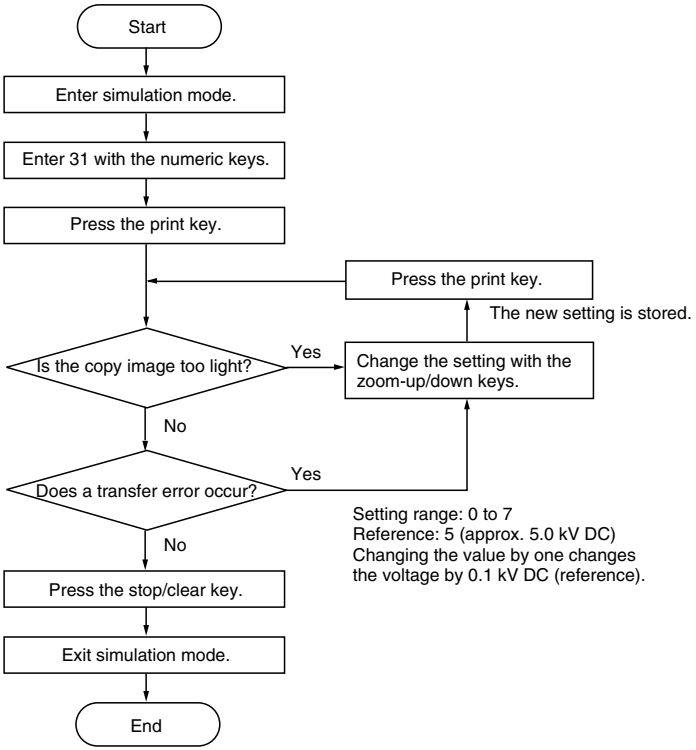


Figure 3-3-49 Replacing the charger wires

(2) Setting transfer voltage (reference)

Perform the following steps after replacing the high-voltage transformer PCB or main PCB, or if a transfer error occurs at extremely high or low humidity.

Procedure


Start
Enter simulation mode.
Enter 31 with the numeric keys.
Press the print key.
Press the print key.
The new setting is stored.
Is the copy image too light?
Yes
Change the setting with the zoom-up/down keys.
No
Does a transfer error occur?
Yes
No
Setting range: 0 to 7
Reference: 5 (approx. 5.0 kV DC)
Changing the value by one changes the voltage by 0.1 kV DC (reference).
Press the stop/clear key.
Exit simulation mode.
End

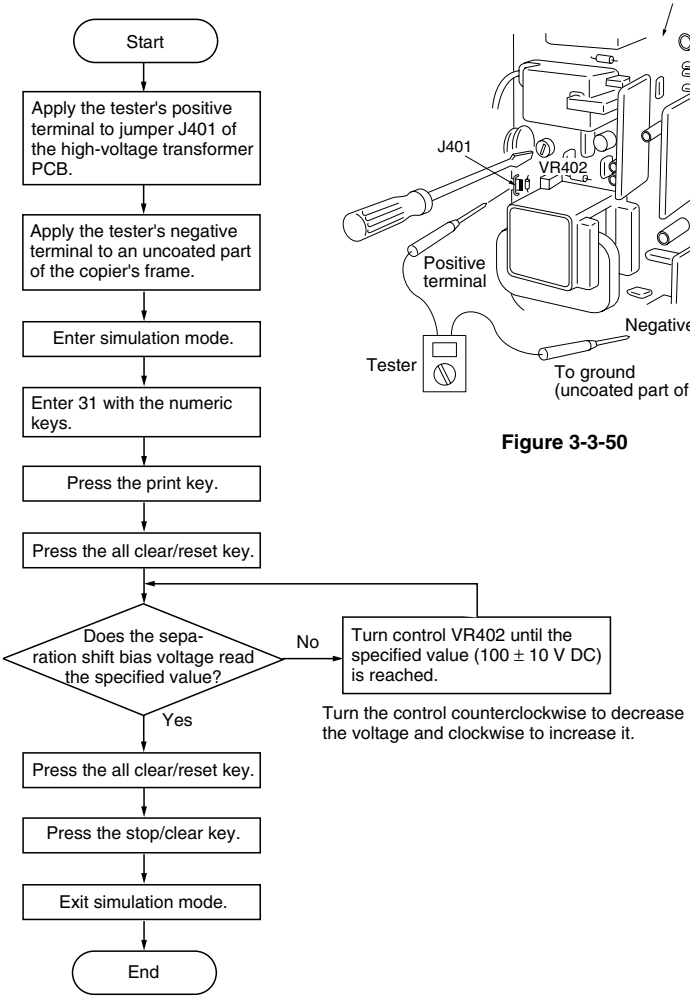
(3) Setting separation shift bias voltage (reference)

Perform the following steps if paper jams frequently in the separation section due to a separation error, or thin paper fails to separate or creases.

Required adjustment tool

• Tester

Procedure


Start
Apply the tester's positive terminal to jumper J401 of the high-voltage transformer PCB.
Apply the tester's negative terminal to an uncoated part of the copier's frame.
Enter simulation mode.
Enter 31 with the numeric keys.
Press the print key.
Press the all clear/reset key.
Does the separation shift bias voltage read the specified value?
No
Turn control VR402 until the specified value (100 ± 10 V DC) is reached.
Turn the control counterclockwise to decrease the voltage and clockwise to increase it.
Yes
Press the all clear/reset key.
Press the stop/clear key.
Exit simulation mode.
End

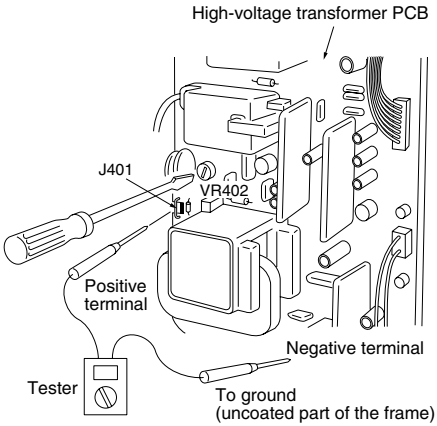


Figure 3-3-50

3-3-8 Cleaning section

(1) Detaching and refitting the cleaning blade

Check or replace the cleaning blade as follows.

Procedure

1. Open the front cover and take the image formation unit out of the copier.
2. Detach the main charger and drum.
3. Push up the blade mount and slide the blade lever toward the machine front to lock the cleaning blade close to the drum.

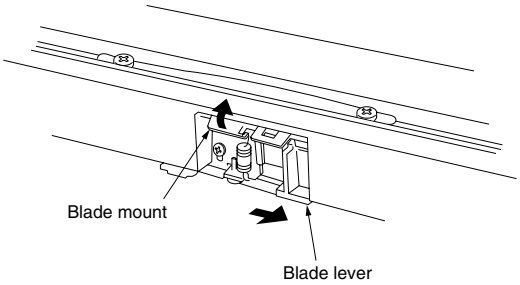


Figure 3-3-51

4. Remove the three screws and the cleaning blade.

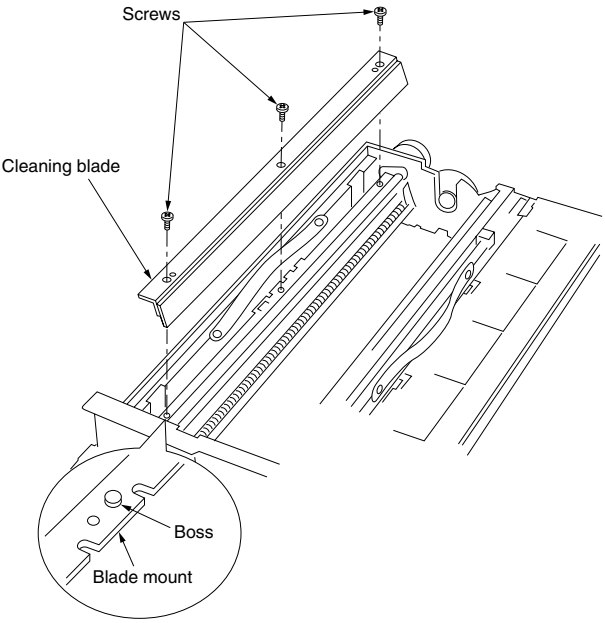


Figure 3-3-52 Removing the cleaning blade

5. Fit the new cleaning blade.
   • Ensure the cleaning blade is not riding over the boss of the blade mount.
6. Slide the blade lever toward the rear to lock the blade away from the drum.
7. Refit the drum and main charger.
8. Refit the image formation unit to the copier and close the front cover.

(2) Detaching and refitting the drum separation claws
Replace the drum separation claws as follows.

Procedure
1. Open the front cover and take the image formation unit out of the copier.
2. Detach the main charger and drum.
3. Remove the two screws and separation claw mount.
   • When refitting the separation claw mount, ensure the claw lever sits between the two tabs of the blade mount.

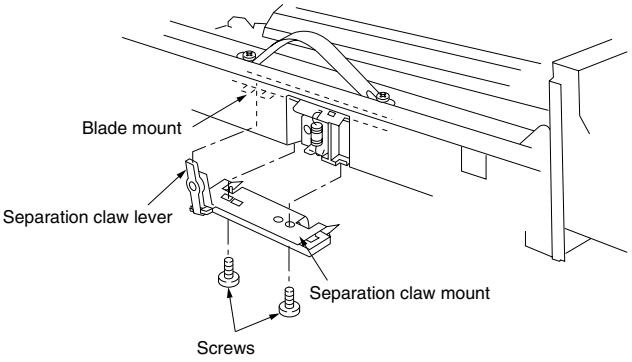


Figure 3-3-53

4. Remove the separation claw lever from the claw mount.
5. Remove the separation claw slide plate from the claw shaft.
6. Remove the drum separation claws from the shaft.

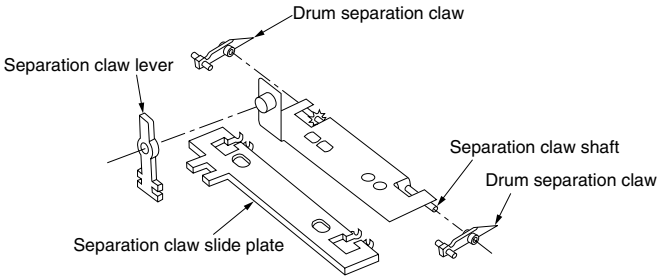


Figure 3-3-54 Removing the drum separation claws

7. Refit all the removed parts.

3-3-9 Fixing and eject section

(1) Replacing the fixing heater

Replace the fixing heater as follows.

Procedure

1. Detach the left cover.
2. Remove the white 1-pin connector of the fixing heater, red 1-pin connector of the fixing heater relay wire, 2-pin connector of the fixing unit thermistor and 3-pin connector of the eject switch.

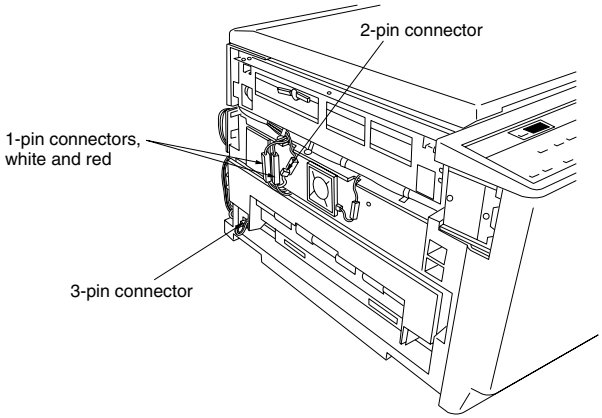


Figure 3-3-55

3. Open the front cover and turn the paper conveying section lever down.
4. Remove the two screws holding the two fixing unit pins at the machine front, and then remove the pins.

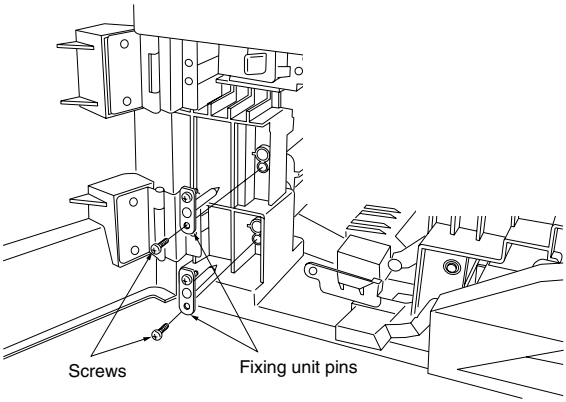


Figure 3-3-56

5. Open the eject cover and slide the fixing unit toward the machine front to free the unit from the pins holding it at the machine rear, and take out the unit.

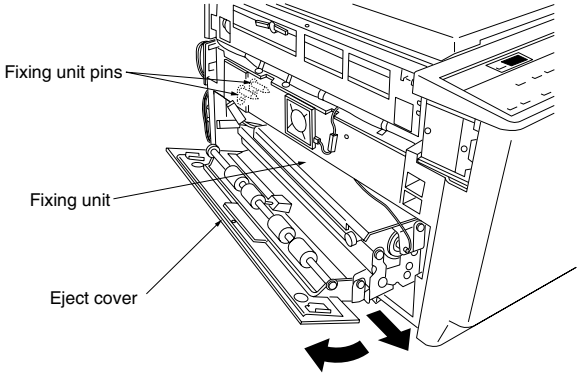


Figure 3-3-57 Removing the fixing unit

6. Remove the two screws and fixing unit cover.
7. Remove the 1-pin fixing heater connector from fixing unit thermostat 1 and free the heater wire from the wire holder.
8. Remove the two screws and heater front and rear retainers.
9. Pull the fixing heater out of the front of the fixing unit.
   • When handling the fixing heater, touch only the ceramic parts.
10. Replace the fixing heater.
11. Refit all the removed parts.

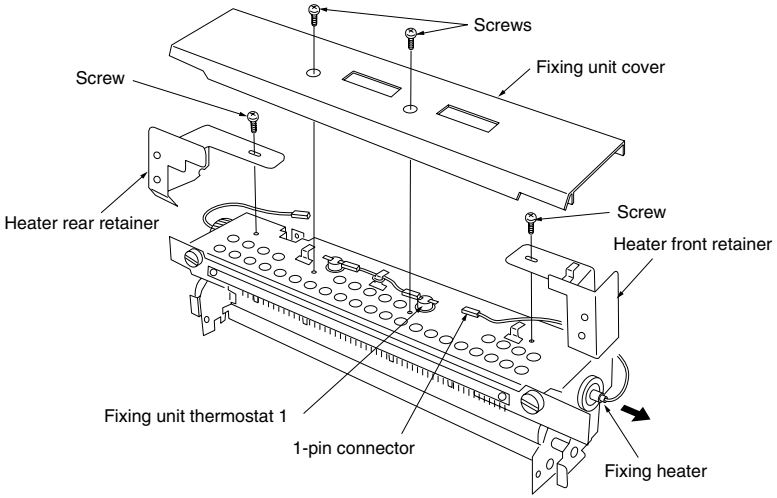


Figure 3-3-58 Detaching the fixing heater

(2) Replacing the fixing unit thermistor
Replace the fixing unit thermistor as follows.

Procedure
1. Remove the fixing unit cover.
2. Remove the screw and fixing unit thermistor.
3. Fit the new fixing unit thermistor, with its projection seated into the upper hole in the fixing unit housing.
4. Refit all the removed parts.

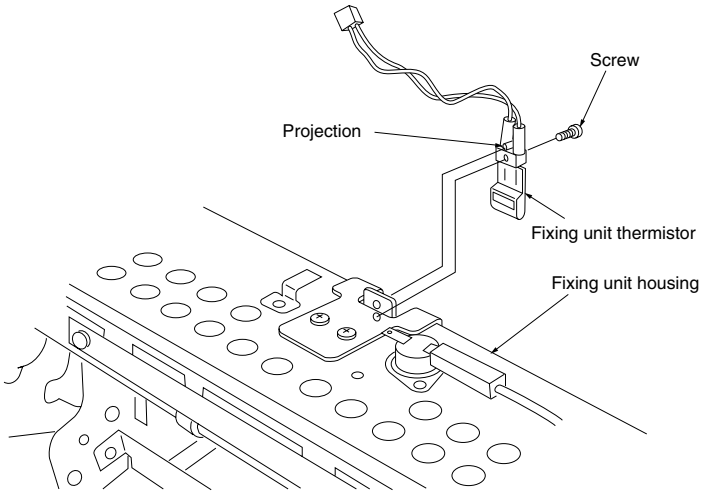


Figure 3-3-59 Detaching the fixing unit thermistor

(3) Detaching and refitting the fixing unit blade
Clean or replace the fixing unit blade as follows.

Procedure
1. Remove the fixing unit cover.
2. Remove the two screws, fixing unit thermistor partition and the fixing unit blade.
3. Clean or replace the fixing unit blade.
4. Refit all the removed parts.

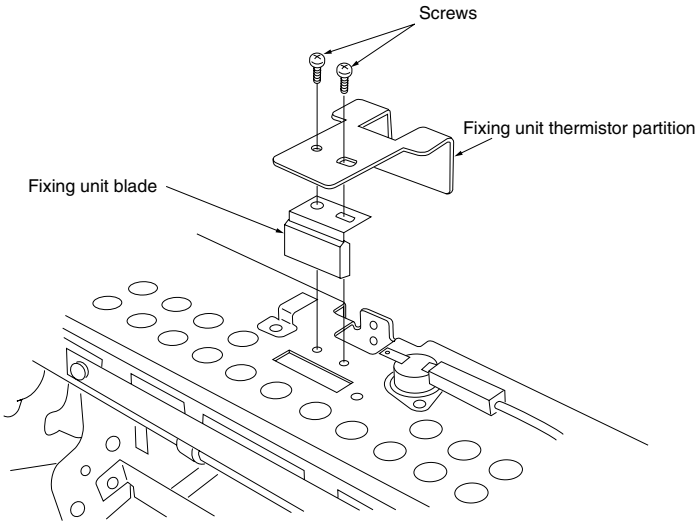


Figure 3-3-60 Detaching the fixing unit blade

(4) Replacing fixing unit thermostats 1 and 2

Replace fixing unit thermostats 1 and/or 2 as follows.

Caution: Use the specified thermostat for replacement. Do not substitute a simple wire or similar; otherwise, the copier will be seriously damaged.

Procedure

1. Detach the fixing unit cover.
2. Remove the connectors of the fixing heater wire, thermostat relay wire and fixing heater relay wire from the fixing unit thermostats.
3. Remove the two screws for each thermostat and then fixing unit thermostats 1 and 2.
4. Replace fixing unit thermostats 1 and/or 2.
   - When fitting, check the temperature indications on the thermostats and install the thermostats on the fixing unit housing in the correct positions.
5. Refit all the removed parts.

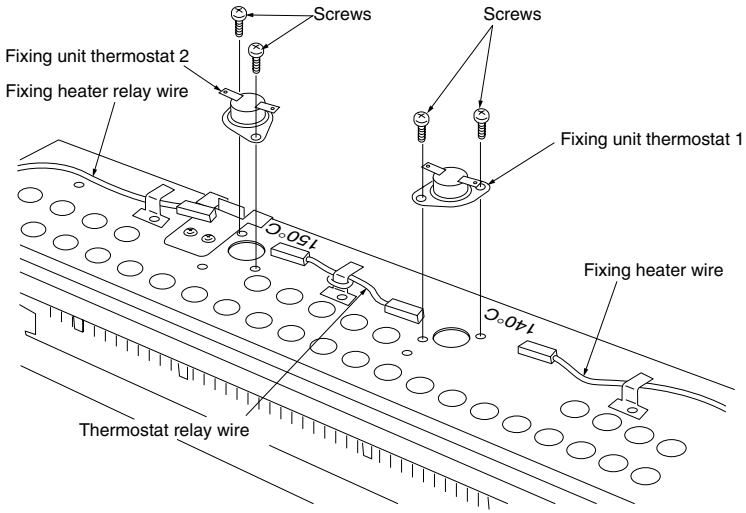


Figure 3-3-61 Detaching the fixing unit thermostats

(5) Detaching and refitting the press roller and its separation claws
Clean or replace the press roller and/or its separation claws as follows.

Procedure
1. Unlock the fixing unit at the front and rear by pulling the press levers in the directions of the arrows in the diagram, and open the unit.

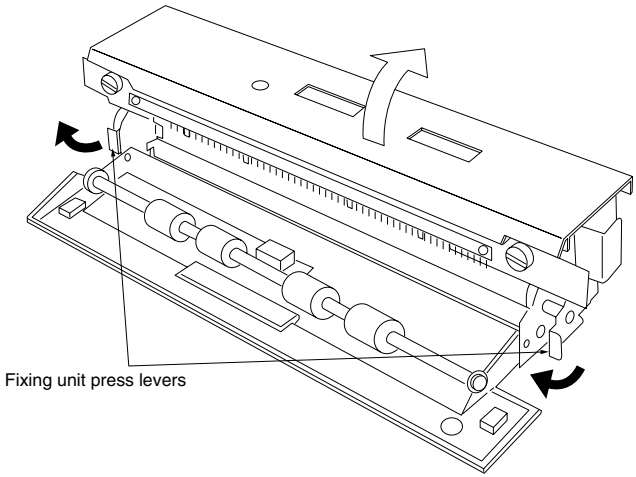


Figure 3-3-62

2. Remove the stopper screw on the fixing unit front frame and open the fixing unit front guide.

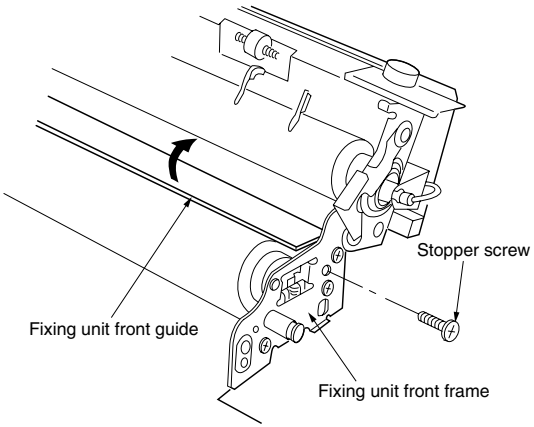


Figure 3-3-63

- **Removing the press roller**

3. Remove the two press roller bushings and the roller from the fixing unit.

- **Removing the press roller separation claws**

4. Remove the screws and press roller separation claws.
5. Clean or replace the press roller and/or its separation claws.
   - When refitting the press roller separation claws, ensure the slot is on the machine rear and the projections of the claw mount are seated in the hole and slot of each claw as shown in the diagram.
6. Refit all the removed parts.
   - When refitting the press roller, ensure that the press roller bushings are not overriding the fixing unit press plates and that the press roller does not touch the tips of its separation claws.

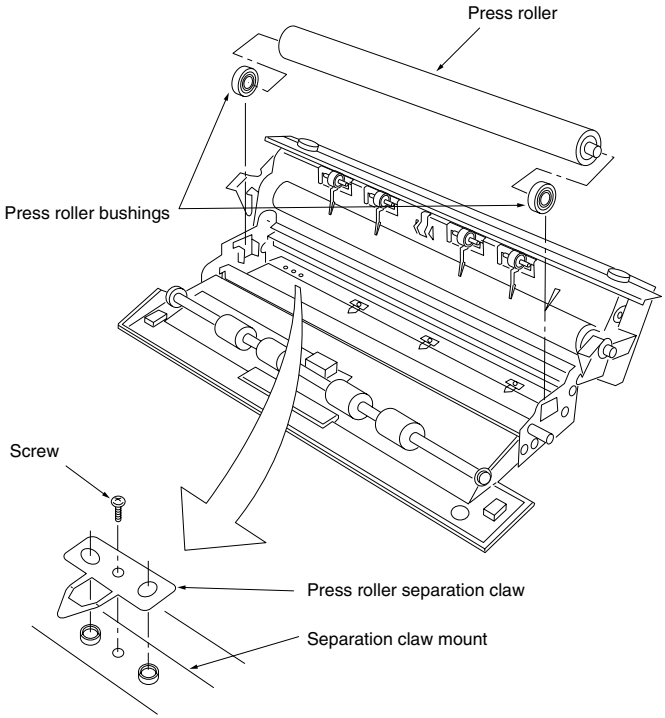


Figure 3-3-64 Detaching the press roller and its separation claws

(6) Detaching and refitting the heat roller and its separation claws
Clean or replace the heat roller and/or its separation claws as follows.

Procedure
1. Remove the fixing heater (see page 3-3-57).
2. Unlock the fixing unit by pulling the press levers at the front and rear, and open the fixing unit (see Fig. 3-3-62).

• **Removing the heat roller**
3. Remove the two pins and fixing unit upper guide from the fixing unit.
4. Remove the circlip and bushing from the front of the heat roller.
5. Remove the circlip, heat roller gear 40 and bushing from the rear of the heat roller.
6. Remove the heat roller from the fixing unit.

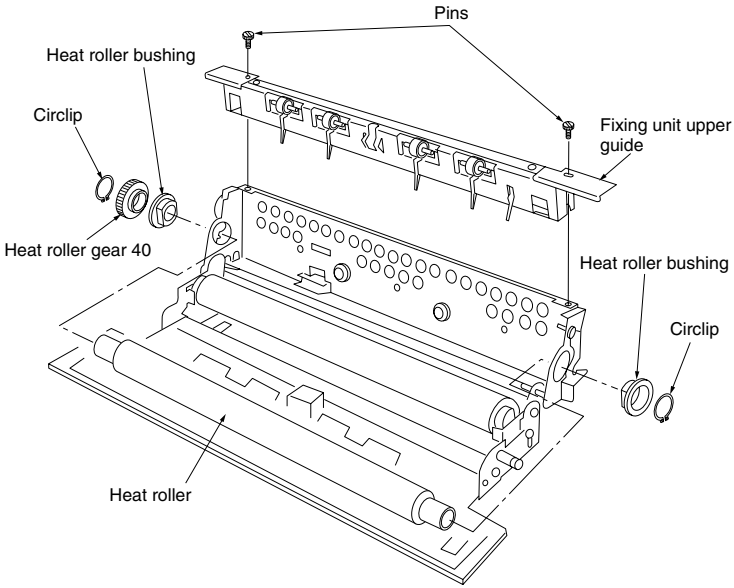


Figure 3-3-65 Detaching the heat roller

• **Removing the heat roller separation claws**

7. Unhook the separation claw springs from the fixing unit upper guide and heat roller separation claws.
8. Remove the E ring and pull the separation claw shaft out to remove the claws.
9. Clean or replace the heat roller and/or its separation claws.
10. Refit all the removed parts.
    - When refitting the heat roller separation claws, ensure that their tips are not overriding the fixing unit upper guide.

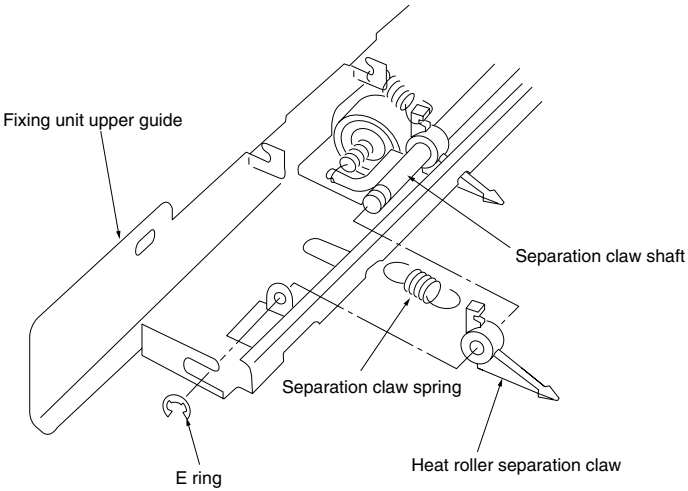


Figure 3-3-66 Detaching the heat roller separation claw

(7) Detaching and refitting the lower eject roller
Clean or replace the lower eject roller as follows.

Procedure
1. Open the eject cover.
2. Remove the E ring and bushing from the front of the lower eject roller.
3. Remove the two E rings, eject gear 22, spring pin and bushing from the rear of the lower eject roller.
4. Remove the lower eject roller from the eject cover.
5. Clean or replace the lower eject roller.
6. Refit all the removed parts.

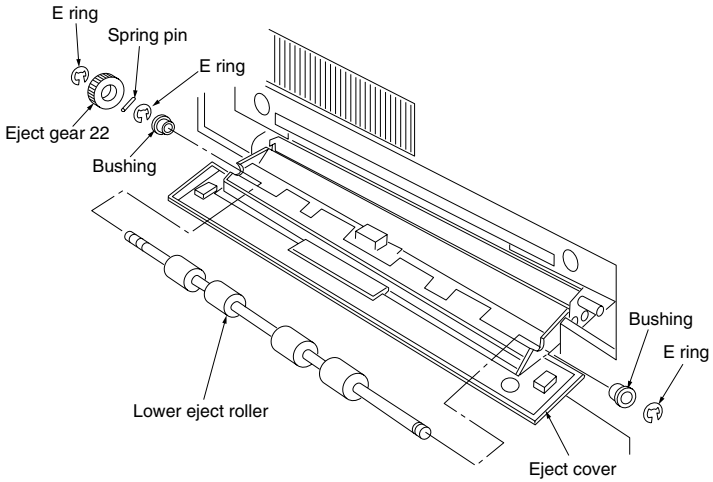


Figure 3-3-67 Detaching the lower eject roller

3-3-10 Others

(1) Replacing the ozone filter

Replace the ozone filter as follows.

Procedure

1. Detach the left cover.
2. Replace the ozone filter with a new one.
3. Refit all the removed parts.

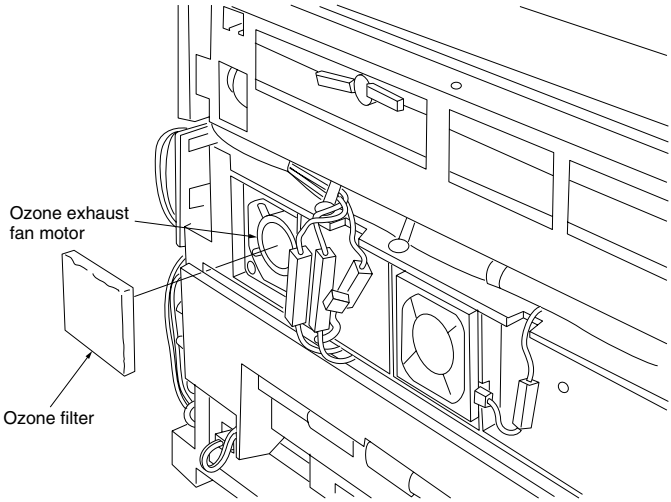


Figure 3-3-68 Detaching the ozone filter

CONTENTS

3-4 PCB Initial Settings

3-4-1 Replacing the main PCB 3-4-1
3-4-2 Adjustment-free variable resistors (VR) 3-4-4

3-4-1 Replacing the main PCB

After replacing the main PCB, remove the NVRAM from the old main PCB and fit it to the new main PCB. If the new NVRAM is used, perform the following steps.

Procedure

• Before removing the old NVRAM:

1. Record the user settings of the following items which must be reentered after replacement.
   • Drawer paper size setting
   • Auto exposure adjustment
   • Manual exposure adjustment
2. Enter simulation mode.
3. Run the following simulations and record the counts.

Sim. No.	Contents
72	Maintenance count
73	Service call records
74	Jam counts
76	Service call counts
77	Paper feed counts

4. Exit simulation mode.
5. Turn the main switch off and unplug the power cord.
6. Replace the NVRAM with the new one.

• After installing the new NVRAM:

7. Insert the power plug and turn the main switch on.
8. Enter simulation mode.
9. Run simulation 70.
10. Run simulation 93 to select the destination.
    Caution: Running simulation 93 changes the user's drawer paper size setting as follows.

93 Destination setting	Drawer paper size setting
Inch specifications	11" × 8 1/2"
Metric specifications	A4

11. Run the following simulations to reenter or check the data recorded on the simulation label.

Sim. No.	Contents
14	Setting the folio size
22	Adjusting the auto exposure reference value
24	Setting the exposure amount
25	Adjusting lateral magnification
26	Adjusting longitudinal magnification
27	Adjusting leading edge registration timing
28	Setting the lens unit rank
29	Adjusting exposure amount for enlargement/reduction mode
31	Setting transfer voltage
32	Setting the drum potential
46	Setting the fixing temperature
47	Setting the fixing preheat temperature
52	Adjusting ADF leading edge registration timing
54	Adjusting the leading edge margin
55	Adjusting the side erasure
59	Adjusting the trailing edge blank cut
62	Adjusting the toner sensor control voltage
71	Setting the maintenance cycle
72	Checking/clearing the maintenance count
73	Checking/clearing service call records
74	Checking/clearing jam counts
76	Checking/clearing the service call counts
77	Checking/clearing the paper feed counts
80	Selecting between double/single counts
81	Setting initial exposure mode
82	Selecting between manual/auto modes
83	Selecting the exposure scale
84	Setting the auto clear time
85	Setting the auto preheat time
86	Setting the auto shutoff time

Sim. No.	Contents
88	Setting the paper size
89	Setting the maximum preset number of copies
91	Setting operation under the toner empty condition
92	Selecting between auto start on/off
98	Setting the optical section fan motor control

12. Exit simulation mode.
13. Reenter the contents of the user settings recorded in step 1.

3-4-2 Adjustment-free variable resistors (VR)

The variable resistors listed below are set at the factory prior to shipping and cannot be adjusted in the field.

- High-voltage transformer PCB: VR101, VR201, VR202, VR301, VR401 and VR402
- Composite PCB: VR601, VR602 and VR603

CONTENTS

3-5 Self Diagnostics

3-5-1 Self-diagnostic function 3-5-1
(1) Self-diagnostic display 3-5-1

3-5-1 Self-diagnostic function

(1) Self-diagnostic display

This unit is equipped with a self-diagnostic function. When it detects a problem with itself, it disables copying and displays the problem as a code consisting of “C” followed by a number between 01 and 90, indicating the nature of the problem.
After removing the problem, the self-diagnostic function can be reset by opening and closing the front cover to turn safety switch 1 off and back on.

Metric

Inch

Figure 3-5-1 Service call code display

Self diagnostic codes

Code	Contents	Remarks	
		Causes	**Check procedures/ corrective measures**
C01	**NVRAM problem** Data in the check area (FF0H to FFFH) of the NVRAM (IC3) do not match the specified initial values (0H to FH) when the main switch is turned on or the eject cover is closed.	NVRAM (IC3) problem.	After turning safety switch 1 off then back on, run simulation 70 and reenter the backup memory contents.
		Defective main PCB.	If C01 persists after reentering the backup memory contents, replace the main PCB.
C20	**Drive motor problem** The motor problem signal (DM ALM) is detected continuously for 2 s after the drive motor has been turned on.	Defective rotation control circuit in the drive motor.	Replace the drive motor.
		Poor contact in the connector terminals.	Check for continuity across the connector terminals. If none, replace them.
		Defective drive transmission system.	Check if the rollers and gears rotate smoothly. If not, grease the bushings and gears. Check for broken gears and replace if any.
		Defective main PCB.	Replace the main PCB and check the operation.
		Defective safety switch 2.	Check for continuity across the contacts. If none when on, replace safety switch 2.

Code	Contents	Remarks	
		Causes	Check procedures/ corrective measures
C30	**Scanner motor problem** The home position switch does not turn on within 10 s after the scanner has started to return at low speed. The home position switch does not turn off within 1 s after the start of forward rotation. The home position switch does not turn on within 3 s after the start of reverse rotation.	Broken scanner motor coil.	Check for continuity across the scanner motor coil. If none, replace the scanner motor.
		Defective home position switch.	Check if CN7-2 on the main PCB goes high when the home position switch is on and goes low when the switch is off. If not, replace the home position switch.
		Poor contact in the home position switch connector terminals.	Check for continuity across the home position switch connector terminals. If none, replace them.
		Loose scanner drive belt.	Reinstall the belt and adjust the tension.
		Loose scanner wire.	Reinstall the wire.
		Loose screws holding the scanner wire retainers.	Retighten the screws and adjust the image focus.
		Defective main PCB.	Replace the main PCB and check the operation.

Code	Contents	Remarks	
		Causes	Check procedures/ corrective measures
C40	**Lens motor problem** The lens home position switch does not turn on or off within 7 s after initial operation has started.	Defective lens motor.	Check for continuity across the coil. If none, replace the lens motor.
		Defective lens home position switch.	Check if CN5-2 on the main PCB goes high when the lens home position switch is on and goes low when the switch is off. If not, replace the lens home position switch.
		Poor contact in the lens home position switch connector terminals.	Check for continuity across the connector terminals. If none, replace them.
		Defective main PCB.	Replace the main PCB and check the operation.
C50	**Shorted high-voltage transformer PCB** The short problem signal (HVT ALM) is detected continuously for 2 s after the high voltage output has been turned on.	Broken main charger wire.	Check the charger wire visually. If it is broken, replace it.
		The main charger leaks.	Check the main charger housing. If it is dirty, clean it.
		Broken transfer or separation charger wire.	Check the charger wires visually. If either is broken, replace it.
		The transfer or separation charger leaks.	Check the transfer charger housing. If it is dirty, clean it.
		Defective high-voltage transformer PCB.	Detach the main or transfer charger assembly; if C50 persists, replace the high-voltage transformer PCB.
		Defective main PCB.	Replace the main PCB and check the operation.

Code	Contents	Remarks	
		Causes	Check procedures/ corrective measures
C61	**Broken fixing heater filament** The fixing stabilization temperature is not reached within 120 s after the main switch has been turned on. The fixing temperature drops below 80°C/176°F after having reached the stabilization level.	Broken fixing heater filament.	Check for continuity. If none, replace the fixing heater.
		Fixing heater installed incorrectly.	Check the fixing heater and reinstall if necessary.
		Fixing unit thermostat triggered.	Check for continuity. If none, replace the fixing unit thermostat.
		Fixing unit thermistor installed incorrectly.	Check the fixing unit thermostat and reinstall if necessary.
		Defective main PCB.	Replace the main PCB and check the operation.
C63	**Broken fixing unit thermistor wire** The fixing unit thermistor output voltage does not change within 7 s after the main switch has been turned on with the fixing temperature remaining below 100°C/212°F.	Broken fixing unit thermistor.	Measure the resistance. If it is $\infty\ \Omega$, replace the fixing unit thermistor.
		Poor contact in the fixing unit thermistor connector terminals.	Check for continuity across the connector terminals. If none, replace them.
		Defective main PCB.	Replace the main PCB and check the operation.
C64	**Shorted fixing unit thermistor/abnormally high temperature** The fixing unit thermistor output exceeds 4.73 V.	Shorted fixing unit thermistor.	Measure the resistance. If it is 0 Ω, replace the fixing unit thermistor.
		Defective main PCB.	Replace the main PCB and check the operation.

Code	Contents	Remarks	
		Causes	Check procedures/ corrective measures
C72	**Broken drum thermistor wire** The drum thermistor output is below 0.5 V continuously for 500 ms or longer.	Broken drum thermistor wire.	Measure the resistance. If it is ∞ Ω, replace the blank lamp unit containing the drum thermistor.
		Poor contact in the drum thermistor connector terminals.	Check for continuity across the connector terminals. If none, replace them.
		Defective main PCB.	Replace the main PCB and check the operation.
C73	**Shorted drum thermistor** The drum thermistor output is above 4.5 V continuously for 500 ms or longer.	Shorted drum thermistor.	Measure the resistance. If it is 0 Ω, replace the drum thermistor.
		Defective main PCB.	Replace the main PCB and check the operation.
C74	**Broken external temperature thermistor wire** The external temperature thermistor output is above 4.5 V continuously for 500 ms or longer.	Poor contact in the humidity sensor PCB connectors.	Check that the connectors are inserted properly.
		Broken external temperature thermistor wire.	Measure the resistance across the external temperature thermistor. If it is ∞ Ω, replace the humidity sensor PCB.
		Defective main PCB.	Replace the main PCB and check the operation.
C75	**Shorted external temperature thermistor** The external temperature thermistor output is below 0.5 V continuously for 500 ms or longer.	Shorted external temperature thermistor.	Measure the resistance across the external temperature thermistor. If it is 0 Ω, replace the humidity sensor PCB.
		Defective main PCB.	Replace the main PCB and check the operation.

Code	Contents	Remarks	
		Causes	Check procedures/ corrective measures
C90	**Copier-ADF serial communication problem** After originals placed on the ADF are detected, a serial communication error is detected three times in succession.	Poor contact in the connector.	Check the connections at CN3 on the main PCB and the connector on the ADF and check for continuity across the connector terminals. Remedy or replace if necessary.
		Defective main PCB.	Replace the main PCB and check the operation.
		Defective power source box.	Replace the power source box and check the operation.

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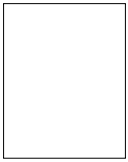
3-6-1 Image formation problems

(1) No image (entirely white).

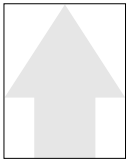


See page 3-6-4.

(2) No image (entirely black).

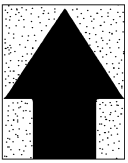
See page 3-6-5.

(3) Image is too light.



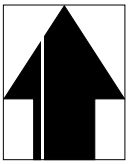
See page 3-6-6.

(4) Background is visible.



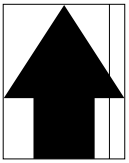
See page 3-6-6.

(5) A white line appears longitudinally.



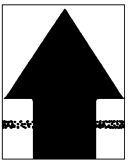
See page 3-6-7.

(6) A black line appears longitudinally.



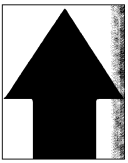
See page 3-6-7.

(7) A black line appears laterally.



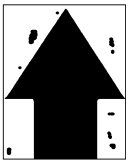
See page 3-6-8.

(8) One side of the copy image is darker than the other.



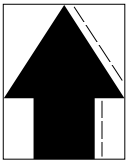
See page 3-6-9.

(9) Black dots appear on the image.



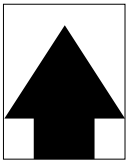
See page 3-6-9.

(10) Image is blurred.



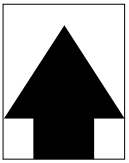
See page 3-6-10.

(11) The leading edge of the image is consistently misaligned with the original.



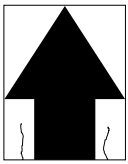
See page 3-6-10.

(12) The leading edge of the image is sporadically misaligned with the original.



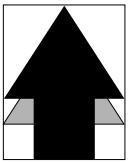
See page 3-6-11.

(13) Paper creases.



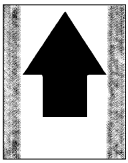
See page 3-6-11.

(14) Offset occurs.



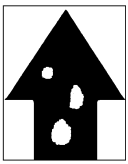
See page 3-6-12.

(15) Black lines appear on both sides of the image in reduction copies.



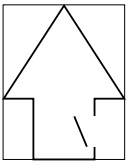
See page 3-6-13.

(16) Image is partly missing.



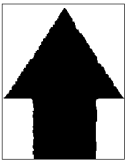
See page 3-6-13.

(17) Fixing is poor.



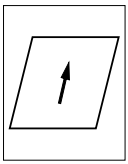
See page 3-6-14.

(18) Image is out of focus.



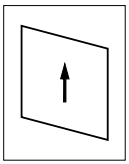
See page 3-6-14.

(19) Image is not square longitudinally.



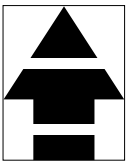
See page 3-6-14.

(20) Image is not square laterally.



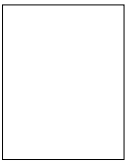
See page 3-6-15.

(21) Image is partially missing laterally.



See page 3-6-15.

(1) No image (entirely white).



Causes
1. No original present.
2. No main charging.
3. No transfer charging.
4. All blank lamps on.
5. Developing section not driven.

Causes	Check procedures/corrective measures
1. No original present.	Place an original in the correct position.
2. No main charging.	
A. Broken main charger wire.	Replace the wire.
B. Leaking main charger housing.	Clean the main charger housing.
C. The connector terminals of the high-voltage transformer PCB make poor contact.	Check for continuity across the terminals. If none, replace them.
D. Defective main PCB.	Run simulation 32 and check if CN1-21 on the main PCB goes low; or check if the correct control voltage is applied to CN1-25. If not, replace the main PCB.
E. Defective high-voltage transformer PCB.	If main charging does not take place during simulation 32 after the main PCB has been found to be normal, replace the high-voltage transformer PCB.
3. No transfer charging.	
A. Broken transfer charger wire.	Replace the wire.
B. Leaking transfer charger housing.	Clean the transfer charger housing.
C. The connector terminals of the high-voltage transformer PCB make poor contact.	Check for continuity across the terminals. If none, replace them.
D. Defective main PCB.	Run simulation 31 and check if CN1-22 on the main PCB goes low; or check if the correct control voltage is applied to CN1-26. If not, replace the main PCB.
E. Defective high-voltage transformer PCB.	If transfer charging does not take place during simulation 31 after the main PCB has been found to be normal, replace the high-voltage transformer PCB.

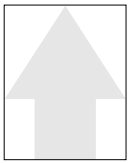
Causes	Check procedures/corrective measures
4. All blank lamps on.	Run simulation 42 and if the check pattern copy is not obtained, replace the main PCB.
5. Developing section not driven.	Check the gears driving the developing section and replace any broken gears.

(2) No image (entirely black).

Causes
1. Broken halogen lamp filament.
2. Halogen lamp fails to light.

Causes	Check procedures/corrective measures
1. Broken halogen lamp filament.	Take the halogen lamp out of the unit and check for continuity across the terminals. If none, replace it (see page 3-3-20).
2. Halogen lamp fails to light.	
A. The optical section thermostat is triggered.	Check for continuity. If none, replace the thermostat after determining the cause.
B. The connector terminals of the composite PCB make poor contact.	Check for continuity across the terminals. If none, replace them.
C. Defective main PCB.	Run simulation 20 and check if CN4-5 on the main PCB remains high. If it does, replace the main PCB.
D. Defective composite PCB.	If the halogen lamp does not light during simulation 20 after the main PCB has been found to be normal, replace the composite PCB.

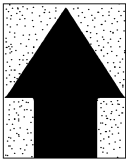
(3) Image is too light.



Causes
1. Insufficient toner.
2. Deteriorated developer.
3. Misadjusted developing section.
4. Dirty or deteriorated drum.

Causes	Check procedures/corrective measures
1. Insufficient toner.	If the add toner indicator is on, replace the cartridge.
2. Deteriorated developer.	Check the number of copies made with the current developer. If it has reached the specified limit, replace the developer.
3. Misadjusted developing section.	Adjust the developing section (see page 3-3-46).
4. Dirty or deteriorated drum.	Clean the drum or, if the maintenance level has been reached, replace it (see page 3-3-40).

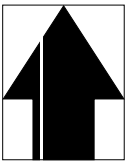
(4) Background is visible.



Causes
1. Dirty optical section.
2. Deteriorated developer.

Causes	Check procedures/corrective measures
1. Dirty optical section.	Clean the light adjusters, mirrors and other parts in the optical section.
2. Deteriorated developer.	Check the number of copies made with the current developer. If it has reached the specified limit, replace the developer.

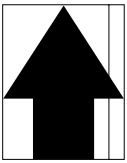
(5) A white line appears longitudinally.



Causes
1. Dirty or flawed main charger wire.
2. Foreign matter in the developing section.
3. Flawed drum.

Causes	Check procedures/corrective measures
1. Dirty or flawed main charger wire.	Clean the main charger wire. If the wire is flawed, replace it.
2. Foreign matter in the developing section.	Check if the magnetic brush is formed uniformly. If not, replace the developer.
3. Flawed drum.	Replace the drum (see page 3-3-40).

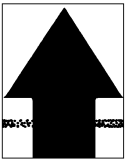
(6) A black line appears longitudinally.



Causes
1. Dirty optical section.
2. Dirty or flawed drum.
3. Deformed or worn cleaning blade.
4. Dirty or flawed main charger grid.

Causes	Check procedures/corrective measures
1. Dirty optical section.	Clean the mirrors, dust filter and other parts in the optical section.
2. Dirty or flawed drum.	Clean the drum or, if it is flawed, replace it (see page 3-3-40).
3. Deformed or worn cleaning blade.	Check visually if the edge of the cleaning blade is deformed or worn. If it is, replace (see page 3-3-54).
4. Dirty or flawed main charger grid.	Replace the main charger grid.

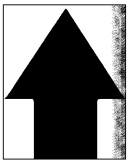
(7) A black line appears laterally.



Causes
1. Flawed drum.
2. Poor developing bias wire contact.
3. Dirty developing section.
4. No developing bias output.

Causes	Check procedures/corrective measures
1. Flawed drum.	Check the drum visually. If it is flawed, replace (see page 3-3-40).
2. Poor developing bias wire contact.	Check for poor developing bias wire contact.
3. Dirty developing section.	Clean any part contaminated with toner or carrier in the developing section.
4. No developing bias output.	
A. Shorted developing bias wire or it makes poor contact.	Check the developing bias wire. If there is any problem, replace it.
B. Defective main PCB.	Run simulation 10 and check if CN1-20 on the main PCB goes low. If not, replace the main PCB.
C. Defective high-voltage transformer PCB.	If no developing bias voltage is output in simulation 10 after the main PCB has been found to be normal, replace the high-voltage transformer PCB.

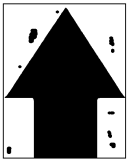
(8) One side of the copy image is darker than the other.



Causes
1. Unevenly distributed halogen lamp light.
2. Dirty optical section.
3. Dirty main charger wire or grid.

Causes	Check procedures/corrective measures
1. Unevenly distributed halogen lamp light.	Adjust the positions of the light adjusters (see page 3-3-22).
2. Dirty optical section.	Clean the mirrors, dust filter and any other dirty parts in the optical section.
3. Dirty main charger wire or grid.	Check if the main charger wire or grid is dirty. If it is, replace it.

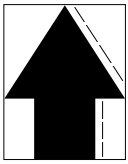
(9) Black dots appear on the image.



Causes
1. Dirty or flawed drum.
2. Dirty contact glass.
3. Deformed cleaning blade.

Causes	Check procedures/corrective measures
1. Dirty or flawed drum.	Clean the drum or, if it is flawed, replace it (see page 3-3-40).
2. Dirty contact glass.	Clean the contact glass.
3. Deformed cleaning blade.	Replace the cleaning blade if it is deformed (see page 3-3-54).

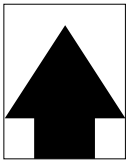
(10) Image is blurred.



Causes
1. Scanner moving erratically.
2. Foreign matter on the scanner rail.
3. Deformed press roller.
4. Drive system problem.

Causes	Check procedures/corrective measures
1. Scanner moving erratically.	Adjust the tension of the scanner wire (see page 3-3-23).
2. Foreign matter on the scanner rail.	Check visually and remove, if any.
3. Deformed press roller.	Check visually and replace (see page 3-3-62).
4. Drive system problem.	Check the gears and belts. Grease the gears or readjust the belt tension if necessary.

(11) The leading edge of the image is consistently misaligned with the original.

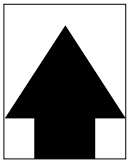


Causes
1. Misadjusted leading edge registration.

Causes	Check procedures/corrective measures
1. Misadjusted leading edge registration.	Readjust the leading edge registration timing (see page 3-3-12).

(12) The leading edge of the image is sporadically misaligned with the original.

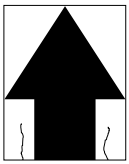
Causes
1. Registration solenoid installed or operating incorrectly.



Causes	Check procedures/corrective measures
1. Registration solenoid installed or operating incorrectly.	Check the installation position and operation of the registration solenoid.

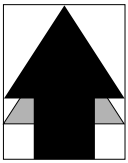
(13) Paper creases.

Causes
1. Paper curled.
2. Paper damp.
3. Defective fixing pressure springs.



Causes	Check procedures/corrective measures
1. Paper curled.	Check the paper storage conditions.
2. Paper damp.	Check the paper storage conditions.
3. Defective fixing pressure springs.	Replace the fixing pressure springs.

(14) Offset occurs.

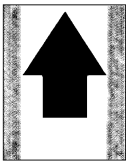


Causes
1. Cleaning blade installed in the wrong position.
2. Defective cleaning blade.
3. Cleaning lamp fails to light.
4. Abnormally high heat roller control temperature.

Causes	Check procedures/corrective measures
1. Cleaning blade installed in the wrong position.	Check the installation position of the cleaning blade and correct it, if necessary.
2. Defective cleaning blade.	Replace the cleaning blade (see page 3-3-54).
3. Cleaning lamp fails to light.	
A. The connector terminals of the cleaning lamp make poor contact.	Check for continuity across the terminals. If none, replace them.
B. Defective cleaning lamp.	Check for continuity across the lamp. If none, replace the lamp.
C. Defective main PCB.	Force CN13-2 on the main PCB to go low and check if the cleaning lamp lights. If it does, replace the main PCB.
4. Abnormally high heat roller control temperature.	Check if the fixing unit thermistor is installed correctly.

(15) Black lines appear on both sides of the image in reduction copies.

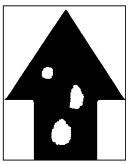
Causes
1. Dirty blank lamps.
2. Defective blank lamps.
3. Defective main PCB.



Causes	Check procedures/corrective measures
1. Dirty blank lamps.	Clean the blank lamps.
2. Defective blank lamps.	Check for one-way continuity across the terminals of each blank lamp. If none, replace the blank lamp unit.
3. Defective main PCB.	Check for signal level changes on the main PCB. Replace the main PCB if necessary.

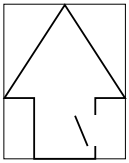
(16) Image is partly missing.

Causes
1. Paper damp.
2. Paper creased.
3. Drum condensation.
4. Flawed drum.



Causes	Check procedures/corrective measures
1. Paper damp.	Check the paper storage conditions.
2. Paper creased.	Change the paper.
3. Drum condensation.	Clean the drum (see page 3-3-43).
4. Flawed drum.	Replace the drum (see page 3-3-40).

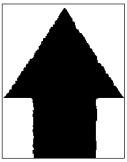
(17) Fixing is poor.



Causes
1. Wrong paper.
2. Defective fixing pressure springs.
3. Flawed press roller.

Causes	Check procedures/corrective measures
1. Wrong paper.	Check if the paper meets specifications.
2. Defective fixing pressure springs.	Replace the fixing pressure springs.
3. Flawed press roller.	Replace the press roller (see page 3-3-62).

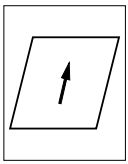
(18) Image is out of focus.



Causes
1. Incorrect focus adjustment.

Causes	Check procedures/corrective measures
1. Incorrect focus adjustment.	Adjust the focus of the image (see page 3-3-26).

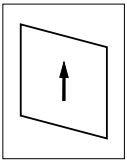
(19) Image is not square longitudinally.



Causes
1. The height of mirror 2 is adjusted incorrectly.

Causes	Check procedures/corrective measures
1. The height of mirror 2 is adjusted incorrectly.	Adjust the longitudinal squareness of the image (see page 3-3-28).

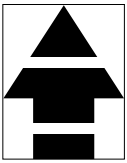
(20) Image is not square laterally.



Causes
1. The height of the mirrors 4 & 5 frame is adjusted incorrectly.

Causes	Check procedures/corrective measures
1. The height of the mirrors 4 & 5 frame is adjusted incorrectly.	Adjust the lateral squareness of the image (see page 3-3-27).

(21) Image is partially missing laterally.



Causes
1. Registration solenoid incorrectly installed or malfunctioning.
2. Paper feed solenoid incorrectly installed or malfunctioning.

Causes	Check procedures/corrective measures
1. Registration solenoid incorrectly installed or malfunctioning.	Check and correct the solenoid installation position and its operation.
2. Paper feed solenoid incorrectly installed or malfunctioning.	Check and correct the solenoid installation alignment and its operation.

3-6-2 Paper misfeeds

Problem	Causes/check procedures	Corrective measures
(1) A paper jam in the registration section is detected as soon as the main switch is turned on (J30 appears).	A piece of paper torn from copy paper is caught around the registration switch.	Check visually and remove it, if any.
	Defective registration switch.	With 5 V DC present at CN17-1 on the main PCB, check if CN17-2 on the main PCB remains low when the registration switch is turned on and off. If it does, replace the registration switch.
(2) A paper jam in the eject section is detected as soon as the main switch is turned on (J50 appears).	A piece of paper torn from copy paper is caught around the eject switch.	Check visually and remove it, if any.
	Defective eject switch.	With 5 V DC present at CN2-7 on the main PCB, check if CN2-8 on the main PCB remains low when the eject switch is turned on and off. If it does, replace the eject switch.
(3) A paper jam in the paper drawer is detected during copying (PF appears).	Paper in the drawer is extremely curled.	Change the paper.
	Check if the front claws inside the paper drawer are deformed.	Replace if deformed.
	Check if the springs inside the paper drawer are deformed.	Remedy if deformed.
	Check if paper feed pulleys A and B are deformed.	Replace if deformed.
	Defective registration switch.	With 5 V DC present at CN17-1 on the main PCB, check if CN17-2 on the main PCB goes low when the registration switch is turned on. If not, replace the registration switch.
	Check if the paper feed solenoid malfunctions.	Remedy if necessary.
	Electrical problem with the paper feed solenoid.	See page 3-6-32.

Problem	Causes/check procedures	Corrective measures
(4) A paper jam on the bypass table is detected during copying (PF appears).	Check if the bypass upper pulley is deformed.	Replace if deformed.
	Defective registration switch.	With 5 V DC present at CN17-1 on the main PCB, check if CN17-2 on the main PCB goes low when the registration switch is turned on. If not, replace the registration switch.
	The bypass solenoid malfunctions.	Check and remedy.
	Electrical problem with the bypass solenoid.	See page 3-6-32.
(5) A paper jam in the paper conveying or fixing section is detected during copying (J40 appears).	Check if the contact between the upper and lower registration rollers is correct.	Remedy if necessary.
	Check if the contact between the upper and lower pre-transfer rollers is correct.	Remedy if necessary.
	Defective eject switch.	With 5 V DC present at CN2-7 on the main PCB, check if CN2-8 on the main PCB goes low when the eject switch is turned on. If not, replace the eject switch.
	The registration solenoid malfunctions.	Check and remedy.
	Electrical problem with the registration solenoid.	See page 3-6-32.

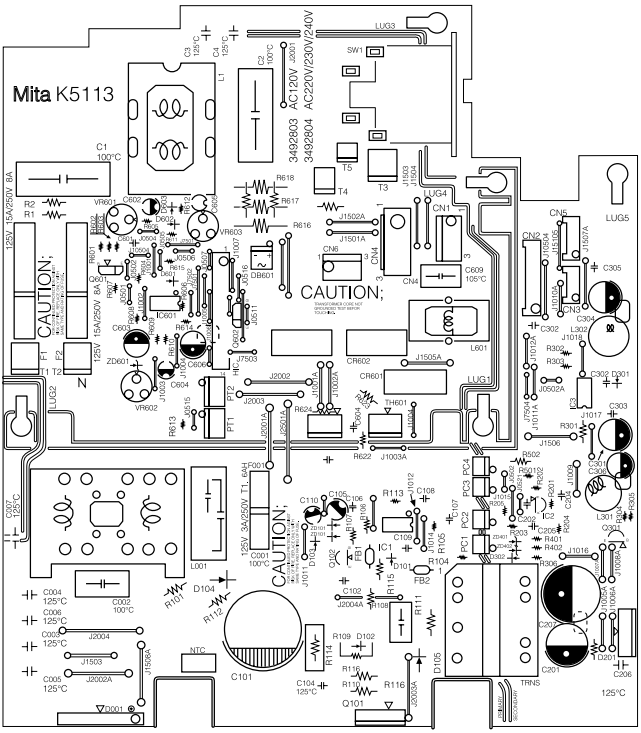
Problem	Causes/check procedures	Corrective measures
(6) A paper jam in the eject section is detected during copying (J50 appears).	Check if the press roller is extremely dirty or deformed.	Clean or replace the press roller (see page 3-3-62).
	Check if the press roller separation claws are extremely dirty or deformed.	Clean or replace the press roller separation claws (see page 3-3-62).
	Check if the heat roller separation claws are extremely dirty or deformed.	Clean or replace the heat roller separation claws (see page 3-3-64).
	Check if the contact between the upper and lower eject rollers is correct.	Remedy if necessary.

3-6-3 PCB terminal voltages

Precautions

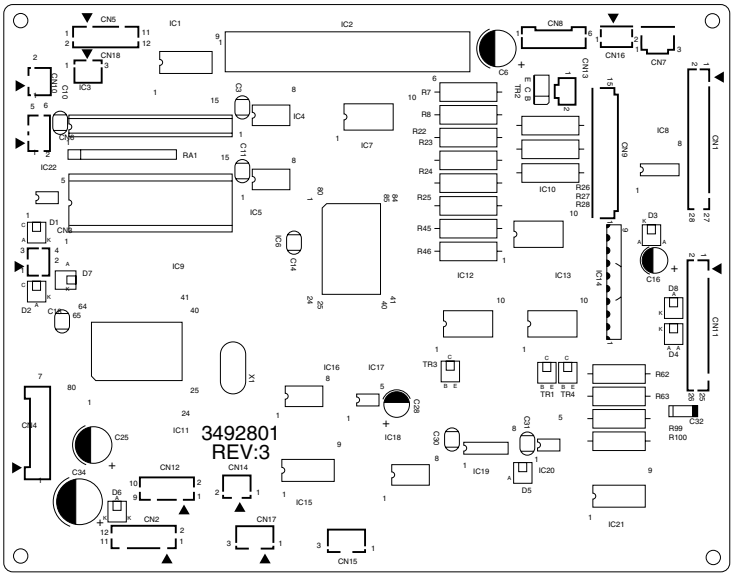
- When handling the circuit boards, do not touch the components with bare hands.
- ICs can be damaged by static discharges. If a PCB contains ICs, do not touch the ICs, cable connectors or edge connectors.
- Store the circuit boards wrapped in aluminum foil, conductive sponge rubber, or similar material.

(1) Composite PCB



Terminals (CN)		Voltage	Remarks
T1	T2	Local AC supply voltage	AC supply, input
1-1	1-3		Supply for HL, output
2-1	2-4	24 V DC	24 V DC supply for HVTPCB, output
2-2	2-5	24 V DC	24 V DC supply for MPCB, output
2-3	2-6	5 V DC	5 V DC supply for MPCB, output
2-7	2-5	0/24 V DC (pulse)	HL light intensity control PWM, input
2-8	2-5	0/24 V DC	H on/off, input
2-9	2-5	24 V DC	SSW2 on/off, output
3-1	3-2	5 V DC	5 V DC supply for DM, output
3-4	3-3	24 V DC	24 V DC supply for DM, output
4-1	4-3	Local AC supply voltage	AC supply for H, output
5-1	2-5	24 V DC	24 V DC supply for SSW2, output
5-3	2-5	0/24 V DC	SSW2 on/off, input
5-5	2-5	0/24 V DC	SSW2 off/on, input

(2) Main PCB



Terminals (CN)		Voltage	Remarks
1-1	4-3	24/0 V DC (pulse)	OPCB LED lighting source (SEG a), output
1-2	4-3	24/0 V DC (pulse)	OPCB LED lighting source (SEG b), output
1-3	4-3	24/0 V DC (pulse)	OPCB LED lighting source (SEG c), output
1-4	4-3	24/0 V DC (pulse)	OPCB LED lighting source (SEG d), output
1-5	4-3	24/0 V DC (pulse)	OPCB LED lighting source (SEG e), output
1-6	4-3	24/0 V DC (pulse)	OPCB LED lighting source (SEG f), output
1-7	4-3	24/0 V DC (pulse)	OPCB LED lighting source (SEG g), output
1-8	4-3	24/0 V DC (pulse)	OPCB LED lighting source (SEG h), output

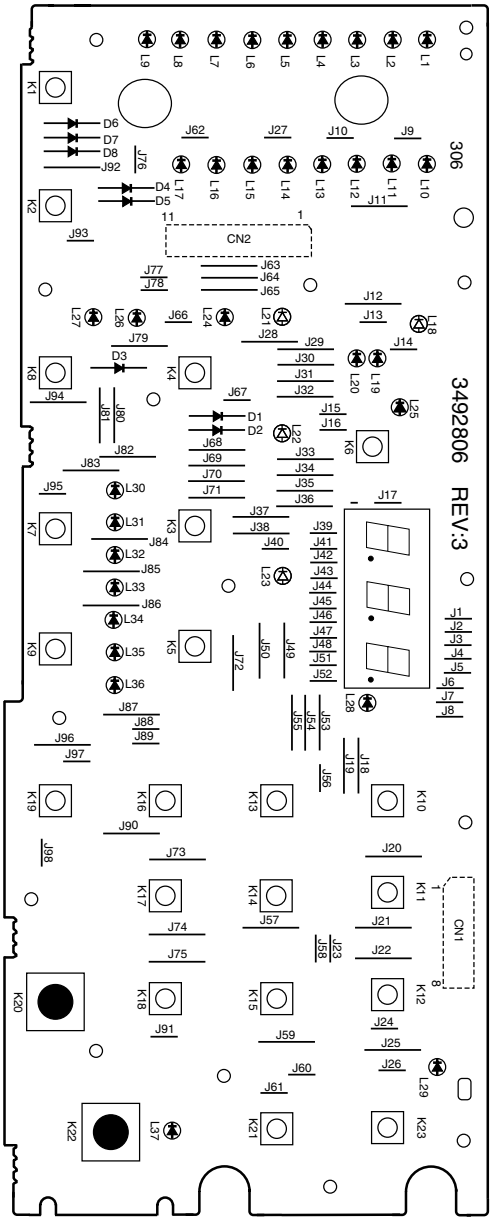
Terminals (CN)		Voltage	Remarks
1-9	4-3	24/0 V DC (pulse)	OPCB scan sink (DEG 0), output
1-10	4-3	24/0 V DC (pulse)	OPCB scan sink (DEG 1), output
1-11	4-3	24/0 V DC (pulse)	OPCB scan sink (DEG 2), output
1-12	4-3	24/0 V DC (pulse)	OPCB scan sink (DEG 3), output
1-13	4-3	24/0 V DC (pulse)	OPCB scan sink (DEG 4), output
1-14	4-3	24/0 V DC (pulse)	OPCB scan sink (DEG 5), output
1-15	4-3	24/0 V DC (pulse)	OPCB scan sink (DEG 6), output
1-16	4-3	24/0 V DC (pulse)	OPCB scan sink (DEG 7), output
1-17	4-3	0/5 V DC (pulse)	OPCB return (KEY 0), input
1-18	4-3	0/5 V DC (pulse)	OPCB return (KEY 1), input
1-19	4-3	0/5 V DC (pulse)	OPCB return (KEY 2), input
1-20	4-3	0/11.7 V DC	Developing bias on/off, output
1-21	4-3	0/15.9 V DC	Main charging on/off, output
1-22	4-3	0/15.9 V DC	Transfer charging on/off, output
1-23	4-3	0/24 V DC	Separation charging on/off, output
1-24	4-3	0 – 5 V DC	Grid control voltage, output
1-25	4-3	0 – 5 V DC	Main charging control voltage, output
1-26	4-3	0 – 5 V DC	Transfer charging control voltage, output
1-27	4-3	0/5 V DC	HVTPCB abnormality detection, input
2-1	4-3	24 V DC	24 V DC supply for BYPSOL, output
2-2	4-3	0/24 V DC	BYPSOL on/off, output
2-3	4-3	24 V DC	24 V DC supply for PFSOL, output
2-4	4-3	0/24 V DC	PFSOL on/off, output
2-5	4-4	5 V DC	CASDSW scan sink, output
2-6	4-4	0/5 V DC (pulse)	CASDSW on/off, input
2-7	2-9	1.2 V DC	DC supply for ESW, output
2-8	2-9	0/5 V DC	ESW on/off, input
3-1	3-2	0/5 V DC (pulse)	Serial communication with ADF (option), output
3-3	3-4	0/5 V DC (pulse)	Serial communication with ADF (option), input
4-1	4-3	24 V DC	24 V DC supply, input
4-2	4-4	5 V DC	5 V DC supply, input
4-5	4-3	0/24 V DC (pulse)	HL light intensity control PWM, output
4-6	4-3	0/24 V DC	H on/off, output
4-7	4-4	24/0 V DC	SSW2 on/off, input
5-2	5-1	5/0 V DC	LHPSW on/off, input

Terminals (CN)		Voltage	Remarks
5-3	5-1	5 V DC	5 V DC supply for LHPSW, output
5-5	5-4		AES detection voltage, input
5-6	5-4	24 V DC	24 V DC supply for AES, output
5-7	4-3	24 V DC	24 V DC supply for LM, output
5-8	4-3	24 V DC	24 V DC supply for LM, output
5-9	4-3	0/24 V DC (pulse)	LM coil energization pulse (LM ø0), output
5-10	4-3	0/24 V DC (pulse)	LM coil energization pulse (LM ø1), output
5-11	4-3	0/24 V DC (pulse)	LM coil energization pulse (LM ø2), output
5-12	4-3	0/24 V DC (pulse)	LM coil energization pulse (LM ø3), output
6-1	6-2	5 V DC	5 V DC supply for HUMSENS, output
6-3	6-2	5 V DC	HUMSENS detection voltage, input
6-5	6-4		ETTH detection voltage, input
7-2	7-1	5/0 V DC	HPSW on/off, input
7-3	7-1	5 V DC	5 V DC supply for HPSW, output
8-1	4-3	0/24 V DC (pulse)	SM coil energization pulse (SM A), output
8-2	4-3	24 V DC	24 V DC supply for SM, output
8-3	4-3	0/24 V DC (pulse)	SM coil energization pulse (SM $\overline{A}$), output
8-4	4-3	0/24 V DC (pulse)	SM coil energization pulse (SM B), output
8-5	4-3	24 V DC	24 V DC supply for SM, output
8-6	4-3	0/24 V DC (pulse)	SM coil energization pulse (SM $\overline{B}$), output
9-1	4-3	0/5 V DC (pulse)	BL scan sink (BL DIG 7), output
9-2	4-3	0/5 V DC (pulse)	BL scan sink (BL DIG 6), output
9-3	4-3	0/5 V DC (pulse)	BL scan sink (BL DIG 5), output
9-4	4-3	0/5 V DC (pulse)	BL scan sink (BL DIG 4), output
9-5	4-3	0/5 V DC (pulse)	BL scan sink (BL DIG 3), output
9-6	4-3	0/5 V DC (pulse)	BL scan sink (BL DIG 2), output
9-7	4-3	0/5 V DC (pulse)	BL scan sink (BL DIG 1), output
9-8	4-3	0/5 V DC (pulse)	BL scan sink (BL DIG 0), output
9-9	4-3	5/0 V DC (pulse)	BL LED lighting source (BL SEG 2), output
9-10	4-3	5/0 V DC (pulse)	BL LED lighting source (BL SEG 1), output
9-11	4-3	5/0 V DC (pulse)	BL LED lighting source (BL SEG 0), output

Terminals (CN)		Voltage	Remarks
9-12	4-4		DTH detection voltage, input
9-13	4-4	5 V DC	5 V DC supply for DTH, output
10-1	4-3	24 V DC	24 V DC supply for MSW, output
10-2	4-3	0/24 V DC	MSW off/on, output
11-1	11-2		TNS control voltage, output
11-3	11-2		TNS detection voltage, input
11-4	11-2	24 V DC	24 V DC supply for TNS, output
11-5	11-6	24/0 V AC	TFM on/off, output
11-7	4-4	0/5 V DC (pulse)	TCDSW scan sink (DIG 6), output
11-8	4-4	0/5 V DC (pulse)	TCDSW on/off, input
11-9	4-4	0/5 V DC (pulse)	TLDS scan sink (DIG 7), output
11-10	4-4	0/5 V DC (pulse)	TLDS on/off, input
11-12	4-3	24 V DC	24 V DC supply for OEFM, output
11-13	4-3	0/13.3/24 V DC	OEFM full speed/half speed/stop, output
11-14	4-3	24 V DC	24 V DC supply for ICFM, output
11-15	4-3	0/13.4/24 V DC	ICFM full speed/half speed/stop, output
11-16	4-3	24 V DC	24 V DC supply for KC (option), output
11-17	4-3	0/24 V DC	KC (option) on/off, output
11-18	4-3	24 V DC	24 V DC supply for TC, output
11-19	4-3	0/24 V DC	TC on/off, output
11-20	11-21	0/5 V DC	KC (option) installed/not installed detection, input
11-22	11-23	0/5 V DC	TC installed/not installed detection, input
11-25	4-4	5 V DC	5 V DC supply for FTH, output
11-26	4-4		FTH detection voltage, input
12-1	12-3	1.2 V DC	DC supply for BYPPLSW, output
12-2	12-3	0/5 V DC	BYPPLSW on/off, input
12-4	4-4	0/5 V DC (pulse)	BYPEDSW on/off, input
12-5	4-4	0/5 V DC (pulse)	BYPEDSW scan sink (DIG 0), output
12-7	12-6	0/5 V DC	BYPPWSW (SIG2) on/off, input
12-8	12-6	0/5 V DC	BYPPWSW (SIG1) on/off, input
12-9	12-6	0/5 V DC	BYPPWSW (SIG0) on/off, input
13-1	4-3	24 V DC	24 V DC supply for CL, output
13-2	4-3	0/24 V DC	CL on/off, output
14-1	4-3	24 V DC	24 V DC supply for RSOL, output
14-2	4-3	0/24 V DC	RSOL on/off, output
15-1	4-4	0/3.6 V DC	DM forward/reverse, output

Terminals (CN)		Voltage	Remarks
15-2	4-4	0/5 V DC	DM abnormality detection, input
15-3	4-4	0/4 V DC	DM drive/stop, output
16-1	4-3	24 V DC	24 V DC supply for OPFM, output
16-2	4-3	0/24 V DC	OPFM on/off, output
17-1	17-3	5 V DC	5 V DC supply for RSW, output
17-2	17-3	0/5 V DC	RSW on/off, input
18-1	4-4	5 V DC	5 V DC supply for SSR, output
18-3	4-4	0/5 V DC	SSR on/off, output

(3) Operation unit PCB



Check for continuity across the terminals to inspect each component of the operation unit PCB keyboards.

Precautions:
- Before starting a continuity check, always turn the copier main switch off, disconnect the power plug from the wall outlet and detach the operation unit PCB from the copier.
- The positive probe should be connected to the terminals in the first column and the negative probe to the terminals in the second column. There should be no reverse continuity.

Terminals (CN)		Remarks
1-1	2-4	Continuity with "%" (L28) lit
1-2		Continuity with segment g of the 100s-digit 7-seg LED lit
1-3		Continuity with segment f of the 100s-digit 7-seg LED lit
1-4		Continuity with segment e of the 100s-digit 7-seg LED lit
1-5		Continuity with segment d of the 100s-digit 7-seg LED lit
1-6		Continuity with segment c of the 100s-digit 7-seg LED lit
1-7		Continuity with segment b of the 100s-digit 7-seg LED lit
1-8		Continuity with segment a of the 100s-digit 7-seg LED lit
1-2	2-5	Continuity with segment g of the 10s-digit 7-seg LED lit
1-3		Continuity with segment f of the 10s-digit 7-seg LED lit
1-4		Continuity with segment e of the 10s-digit 7-seg LED lit
1-5		Continuity with segment d of the 10s-digit 7-seg LED lit
1-6		Continuity with segment c of the 10s-digit 7-seg LED lit
1-7		Continuity with segment b of the 10s-digit 7-seg LED lit
1-8		Continuity with segment a of the 10s-digit 7-seg LED lit
1-1	2-6	Continuity with original size indicator (L9)*1 lit
1-2		Continuity with segment g of the 1s-digit 7-seg LED lit
1-3		Continuity with segment f of the 1s-digit 7-seg LED lit
1-4		Continuity with segment e of the 1s-digit 7-seg LED lit
1-5		Continuity with segment d of the 1s-digit 7-seg LED lit
1-6		Continuity with segment c of the 1s-digit 7-seg LED lit
1-7		Continuity with segment b of the 1s-digit 7-seg LED lit
1-8		Continuity with segment a of the 1s-digit 7-seg LED lit
1-1	2-7	Continuity with original size indicator (L8)*1 lit
1-2		Continuity with original size indicator (L7)*1 lit
1-3		Continuity with original size indicator (L6)*1 lit
1-4		Continuity with original size indicator (L5) lit
1-5		Continuity with original size indicator (L4) lit

*1 Metric models only.

Terminals (CN)		Remarks
1-6	2-7	Continuity with original size indicator (L3) lit
1-7		Continuity with original size indicator (L2) lit
1-8		Continuity with original size indicator (L1) lit
1-1	2-8	Continuity with paper size indicator (L17)*1 lit
1-2		Continuity with paper size indicator (L16)*1 lit
1-3		Continuity with paper size indicator (L15)*1 lit
1-4		Continuity with paper size indicator (L14) lit
1-5		Continuity with paper size indicator (L13) lit
1-6		Continuity with paper size indicator (L12) lit
1-7		Continuity with paper size indicator (L11) lit
1-8		Continuity with paper size indicator (L10) lit
1-1	2-9	Continuity with ADF jam indicator (L18) lit
1-2		Continuity with zoom copy indicator (L25) lit
1-3		Continuity with manual indicator (L24) lit
1-4		Continuity with check paper size/direction indicator (L23) lit
1-5		Continuity with maintenance indicator (L22) lit
1-6		Continuity with add toner indicator (L21) lit
1-7		Continuity with paper source (drawer) indicator (L20) lit
1-6	2-10	Continuity with auto selection indicator (L29) lit
1-7		Continuity with photo original indicator (L27) lit
1-8		Continuity with auto exposure indicator (L26) lit
1-1	2-11	Continuity with copy start indicator (L37) lit
1-2		Continuity with exposure (Exp. 7) indicator (L36) lit
1-3		Continuity with exposure (Exp. 6) indicator (L35) lit
1-4		Continuity with exposure (Exp. 5) indicator (L34) lit
1-5		Continuity with exposure (Exp. 4) indicator (L33) lit
1-6		Continuity with exposure (Exp. 3) indicator (L32) lit
1-7		Continuity with exposure (Exp. 2) indicator (L31) lit
1-8		Continuity with exposure (Exp. 1) indicator (L30) lit
2-2	2-4	Continuity with auto selection key (K23) pressed, no continuity with the key released.
2-3		Continuity with recall % key (K6) pressed, no continuity with the key released.
2-1	2-5	Continuity with zoom-up key (K5) pressed, no continuity with the key released.
2-2		Continuity with manual key (K4) pressed, no continuity with the key released.

*1 Metric models only.

Terminals (CN)		Remarks
2-3	2-5	Continuity with zoom-down key (K3) pressed, no continuity with the key released.
2-1	2-6	Continuity with exposure adjustment (right) key (K9) pressed, no continuity with the key released.
2-2		Continuity with auto/manual exposure key (K8) pressed, no continuity with the key released.
2-3		Continuity with exposure adjustment (left) key (K7) pressed, no continuity with the key released.
2-1	2-7	Continuity with paper select key (K2) pressed, no continuity with the key released.
2-2		Continuity with original select key (K1) pressed, no continuity with the key released.
2-3		Continuity with print key (K22) pressed, no continuity with the key released.
2-1	2-8	Continuity with all clear/reset key (K21) pressed, no continuity with the key released.
2-2		Continuity with stop/clear key (K20) pressed, no continuity with the key released.
2-3		Continuity with numeric key 9 (K18) pressed, no continuity with the key released.
2-1	2-9	Continuity with numeric key 8 (K17) pressed, no continuity with the key released.
2-2		Continuity with numeric key 7 (K16) pressed, no continuity with the key released.
2-3		Continuity with numeric key 6 (K15) pressed, no continuity with the key released.
2-1	2-10	Continuity with numeric key 5 (K14) pressed, no continuity with the key released.
2-2		Continuity with numeric key 4 (K13) pressed, no continuity with the key released.
2-3		Continuity with numeric key 3 (K12) pressed, no continuity with the key released.
2-1	2-11	Continuity with numeric key 2 (K11) pressed, no continuity with the key released.
2-2		Continuity with numeric key 1 (K10) pressed, no continuity with the key released.
2-3		Continuity with numeric key 0 (K19) pressed, no continuity with the key released.

3-6-4 Electrical problems

Problem	Causes	Check procedures/corrective measures
(1) The machine does not operate when the main switch is turned on.	No electricity at the power outlet.	Measure the input voltage.
	The power cord is not plugged in properly.	Check the contact between the power plug and the outlet.
	The front cover is not closed completely.	Check the front cover.
	Broken power cord.	Check for continuity. If none, replace the cord.
	Defective main switch.	Check for continuity across the contacts. If none, replace the main switch.
	Blown fuse in the composite PCB.	Check for continuity. If none, remove the cause of blowing and replace the fuse.
	Defective safety switch 1.	Check for continuity across the contacts of safety switch 1. If none, replace the switch.
	Defective composite PCB.	With AC present, check for 24 V DC at CN2-2 on the composite PCB and 5 V DC at CN2-3. If none, replace the composite PCB.
(2) The drive motor does not operate (C20).	Poor contact in the drive motor connector terminals.	Check for continuity across the connector terminals. If none, replace them.
	Defective main PCB.	Run simulation 10 and check if CN15-3 on the main PCB goes low. If not, replace the main PCB.
	Broken drive motor gear.	Check visually and replace the drive motor if necessary.
(3) The scanner motor does not operate (C30).	Broken scanner motor coil.	Check for continuity across the coil. If none, replace the scanner motor.
	Poor contact in the scanner motor connector terminals.	Check for continuity across the connector terminals. If none, replace them.
	Defective main PCB.	Run simulation 21 and check if the motor drive coil energization pulse signals are output at CN8-1, -3, -4 and -6 on the main PCB. If not, replace the main PCB.

Problem	Causes	Check procedures/corrective measures
(4) The lens motor does not operate (C40).	Broken lens motor coil.	Check for continuity across the coil. If none, replace the lens motor.
	Poor contact in the lens motor connector terminals.	Check for continuity across the connector terminals. If none, replace them.
	Defective main PCB.	Run simulation 23 and check if the motor drive coil energization pulse signals are output at CN5-9, -10, -11 and -12 on the main PCB. If not, replace the main PCB.
(5) The toner feed motor does not operate.	Broken toner feed motor coil.	Check for continuity across the coil. If none, replace the toner feed motor.
	Poor contact in the toner feed motor connector terminals.	Check for continuity across the connector terminals. If none, replace them.
	Defective main PCB.	Run simulation 10 and check if 24 V AC is output across CN11-5 and CN11-6 on the main PCB. If none, replace the main PCB.
(6) The optical section fan motor does not operate.	Broken optical section fan motor coil.	Check for continuity across the coil. If none, replace the optical section fan motor.
	Poor contact in the optical section fan motor connector terminals.	Check for continuity across the connector terminals. If none, replace them.
	Defective main PCB.	Run simulation 20 and check if CN16-2 on the main PCB goes low. If not, replace the main PCB.
(7) The internal cooling fan motor does not operate at all or does not turn at full speed.	Broken internal cooling fan motor coil.	Check for continuity across the coil. If none, replace the internal cooling fan motor.
	Poor contact in the internal cooling fan motor connector terminals.	Check for continuity across the connector terminals. If none, replace them.
	Defective main PCB.	Run simulation 10 and check if CN11-15 on the main PCB goes low (about 12 V at half speed). If not, replace the main PCB.

Problem	Causes	Check procedures/corrective measures
(8) The ozone exhaust fan motor does not operate at all or does not turn at full speed.	Broken ozone exhaust fan motor coil.	Check for continuity across the coil. If none, replace the ozone exhaust fan motor.
	Poor contact in the ozone exhaust fan motor connector terminals.	Check for continuity across the connector terminals. If none, replace them.
	Defective main PCB.	Run simulation 10 and check if CN11-13 on the main PCB goes low (about 12 V at half speed). If not, replace the main PCB.
(9) The paper feed solenoid does not operate.	Broken paper feed solenoid coil.	Check for continuity across the coil. If none, replace the paper feed solenoid.
	Poor contact in the paper feed solenoid connector terminals.	Check for continuity across the connector terminals. If none, replace them.
	Defective main PCB.	Run simulation 12 and check if CN2-4 on the main PCB goes low. If not, replace the main PCB.
(10) The bypass solenoid does not operate.	Broken bypass solenoid coil.	Check for continuity across the coil. If none, replace the bypass solenoid.
	Poor contact in the bypass solenoid connector terminals.	Check for continuity across the connector terminals. If none, replace them.
	Defective main PCB.	Run simulation 12 and check if CN2-2 on the main PCB goes low. If not, replace the main PCB.
(11) The registration solenoid does not operate.	Broken registration solenoid coil.	Check for continuity across the coil. If none, replace the registration solenoid.
	Poor contact in the registration solenoid connector terminals.	Check for continuity across the connector terminals. If none, replace them.
	Defective main PCB.	Run simulation 12 and check if CN14-2 on the main PCB goes low. If not, replace the main PCB.

Problem	Causes	Check procedures/corrective measures
(12) The halogen lamp does not light.	Broken halogen lamp filament.	Check for continuity. If none, replace the halogen lamp (see page 3-3-20).
	Optical section thermostat triggered.	See page 3-6-5.
	Poor contact in the composite PCB connector terminals.	
	Defective main PCB.	
	Defective composite PCB.	
(13) The halogen lamp does not turn off.	Defective main PCB.	If HL CONT (PWM) signal is always output from CN4-5 on the main PCB, replace the main PCB.
	Defective composite PCB.	If the halogen lamp does not turn off when no HL CONT (PWM) signal is input to CN2-7 on the composite PCB, replace the composite PCB.
(14) The cleaning lamp does not light.	Broken cleaning lamp coil.	Check for continuity. If none, replace the cleaning lamp.
	Poor contact in the cleaning lamp connector terminals.	Check for continuity across the connector terminals. If none, replace them.
	Defective main PCB.	Run simulation 10 and check if CN13-2 on the main PCB goes low. If not, replace the main PCB.
(15) The fixing heater does not turn on (C61, C63).	Broken fixing heater wire.	Check for continuity. If none, replace the fixing heater (see page 3-3-57).
	Fixing unit thermostat 1 or 2 triggered.	Check for continuity across each thermostat. If none, remove the cause of blowing and replace the thermostat.
	Broken fixing unit thermistor wire.	Measure the resistance. If it is $\infty\ \Omega$, replace the fixing unit thermistor.

Problem	Causes	Check procedures/corrective measures
(16) The fixing heater does not turn off (fixing unit thermostat 1 or 2 triggered, C64).	Dirty sensor part of the fixing unit thermistor.	Check visually and clean the thermistor sensor parts.
	Defective composite PCB.	If the fixing heater stays on with CN2-8 on the composite PCB high, replace the composite PCB.
	Defective main PCB.	If CN4-6 on the main PCB is always low, replace the main PCB.
(17) Main charging does not take place.	Broken main charger wire.	Check visually and replace the main charger wire if it is broken (see page 3-3-17).
	Leaking main charger housing.	See page 3-6-4.
	Poor contact in the high-voltage transformer PCB connector terminals.	
	Defective main PCB.	
	Defective high-voltage transformer PCB.	
(18) Transfer charging does not take place.	Broken transfer charger wire.	Check visually and replace the transfer charger wire if it is broken (see page 3-3-49).
	Leaking transfer charger housing.	See page 3-6-4.
	Poor contact in the high-voltage transformer PCB connector terminals.	
	Defective main PCB.	
	Defective high-voltage transformer PCB.	

Problem	Causes	Check procedures/corrective measures
(19) Separation charging does not take place.	Broken separation charger wire.	Check visually and replace the separation charger wire if it is broken (see page 3-3-49).
	Poor contact in the high-voltage transformer PCB connector terminals.	Check for continuity across the connector terminals. If none, replace them.
	Defective high-voltage transformer PCB.	Run simulation 31 and if separation charging does not take place while CN1-5 on the high-voltage transformer PCB goes low, replace the high-voltage transformer PCB.
	Defective main PCB.	Run simulation 31 and check if CN1-23 on the main PCB goes low. If not, replace the main PCB.
(20) No developing bias is output.	Poor contact in the developing bias wire.	Check the developing bias wire for poor contact.
	Poor contact in the high-voltage transformer PCB connector terminals.	Check for continuity across the connector terminals. If none, replace them.
	Defective high-voltage transformer PCB.	Run simulation 10. If no developing bias is output while CN1-8 on the high-voltage transformer PCB goes low, replace the high-voltage transformer PCB.
	Defective main PCB.	Run simulation 10 and check if CN1-20 on the main PCB goes low. If not, replace the main PCB.
(21) PF is displayed while paper is present in the paper drawer.	Poor contact in the drawer switch connector terminals.	Check for continuity across the connector terminals. If none, replace them.
	Defective drawer switch.	Check for continuity. If none when the drawer switch is turned on, replace the switch.

Problem	Causes	Check procedures/corrective measures
(22) The size of paper placed on the bypass table is not displayed correctly.	Poor contact in the bypass paper length switch connector terminals.	Check for continuity across the connector terminals. If none, replace them.
	Poor contact in the bypass paper width switch connector terminals.	Check for continuity across the connector terminals. If none, replace them.
	Defective bypass paper length switch.	Check if CN12-2 on the main PCB goes low when the bypass paper length switch is turned on. If not, replace the bypass paper length switch.
	Defective bypass paper width switch.	If the levels of CN12-7, -8 and -9 on the main PCB do not change while the insertion guides on the bypass table are moved, replace the bypass paper width switch.
	Poor contact in the bypass table extended detection switch connector terminals.	Check for continuity across the connector terminals. If none, replace them.
	Defective bypass table extended detection switch.	Check if CN12-4 on the main PCB goes low when the bypass table extended detection switch is turned on. If not, replace the bypass table extended detection switch.
(23) A paper jam is indicated as soon as the main switch is turned on.	A piece of paper torn from copy paper is caught around the registration or eject switch.	Check visually and remove it, if any.
	Defective registration switch.	With 5 V DC present at CN17-1 on the main PCB, if CN17-2 on the main PCB stays low when the registration switch is turned on and off, replace the registration switch.
	Defective eject switch.	With 5 V DC present at CN2-7 on the main PCB, if CN2-8 on the main PCB stays low when the eject switch is turned on and off, replace the eject switch.

Problem	Causes	Check procedures/corrective measures
(24) OP is displayed when the eject cover is completely closed.	Poor contact in safety switch 2 connector terminals.	Check for continuity across the connector terminals. If none, replace them.
	Defective safety switch 2.	Check for continuity across the contacts of safety switch 2. If none when on, replace safety switch 2.
(25) Others	Wiring is broken, shorted or makes poor contact.	Check for continuity. If none, repair.
	Noise.	Locate the source of noise and remove.

3-6-5 Mechanical problems

Problem	Causes/check procedures	Corrective measures
(1) No primary paper feed.	Check if the surfaces of paper feed pulleys A & B and the bypass upper pulley are dirty with paper powder.	Clean with isopropyl alcohol.
	Electrical problem with the paper feed or bypass solenoid.	See page 3-6-32.
(2) No secondary paper feed.	Check if the surfaces of the upper & lower registration rollers and upper & lower pre-transfer rollers are dirty with paper powder.	Clean with isopropyl alcohol.
	Electrical problem with the registration solenoid.	See page 3-6-32.
(3) Skewed paper feed.	Check if the front claws inside the paper drawer are deformed.	Remedy if deformed.
	Check if the springs inside the paper drawer are deformed.	Remedy or replace if deformed.
(4) The scanner does not travel.	Check if the scanner wires are loose.	Reinstall the scanner wires (see page 3-3-23).
	Electrical problem with the scanner motor.	See page 3-6-30.
(5) Multiple sheets of paper are fed at one time.	Check if the front claws inside the paper drawer are deformed.	Remedy if deformed.
	Check if the paper is curled.	Change the paper.
(6) Paper jams.	Check if the paper is excessively curled.	Change the paper.
	Check if the front claws inside the paper drawer are deformed.	Remedy if deformed.
	Check if the springs in the paper drawer are deformed.	Remedy if deformed.
	Check if the press roller is extremely dirty or deformed.	Clean or replace the press roller (see page 3-3-62).
	Check if the press roller separation claws are extremely dirty or deformed.	Clean or replace the press roller separation claws (see page 3-3-62).
	Check if the heat roller separation claws are extremely dirty or deformed.	Clean or replace the heat roller separation claws (see page 3-3-64).

Problem	Causes/check procedures	Corrective measures
(7) Toner drops on the paper conveying path.	Check if the developing unit is extremely dirty.	Clean the developing unit.
(8) Abnormal noise is heard.	Check if the rollers and gears operate smoothly.	Grease the bushings and gears.
	Check if the paper feed, bypass and registration solenoids are installed correctly.	Remedy.

CONTENTS

3-7 Appendixes

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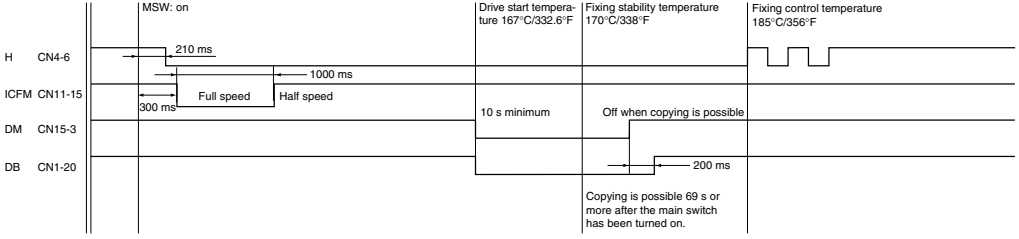
Timing chart No. 1 From the main switch being turned on to copier stabilization

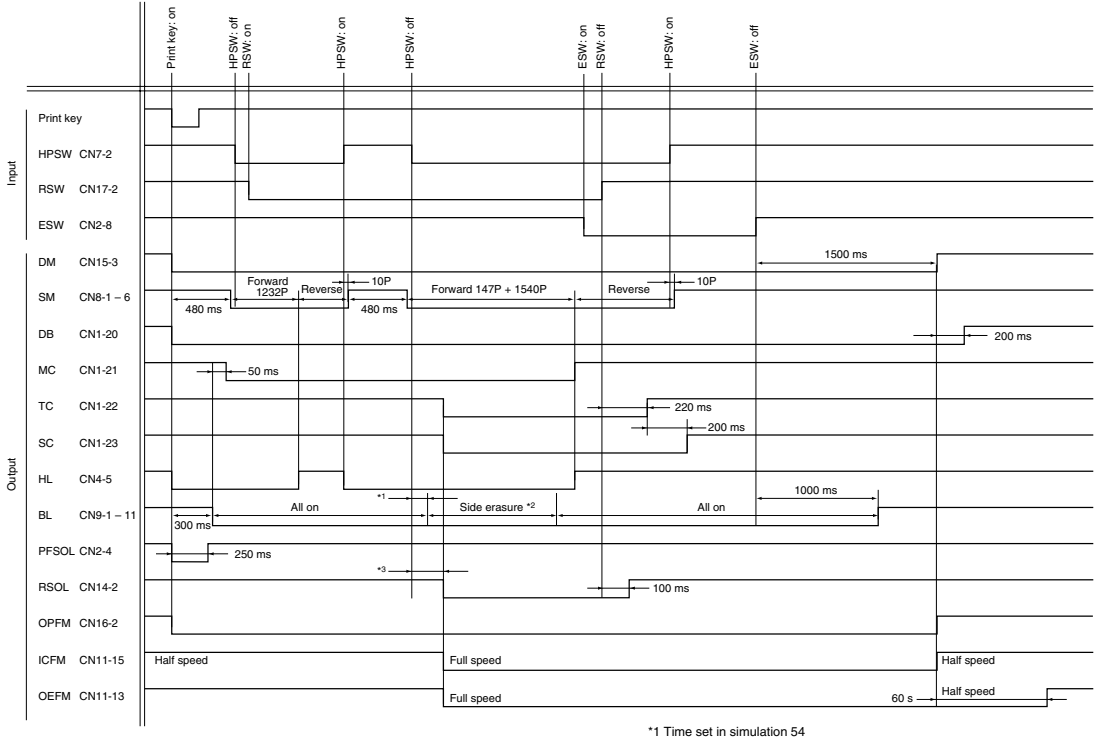
With the fixing temperature at 100°C/212°F or above when the main switch is turned on

With the fixing temperature at 13°C/55.4°F or above but below 100°C/212°F and with the external temperature at 18°C/64.4°F or above when the main switch is turned on

Under other conditions (when abnormally low temperature is detected)

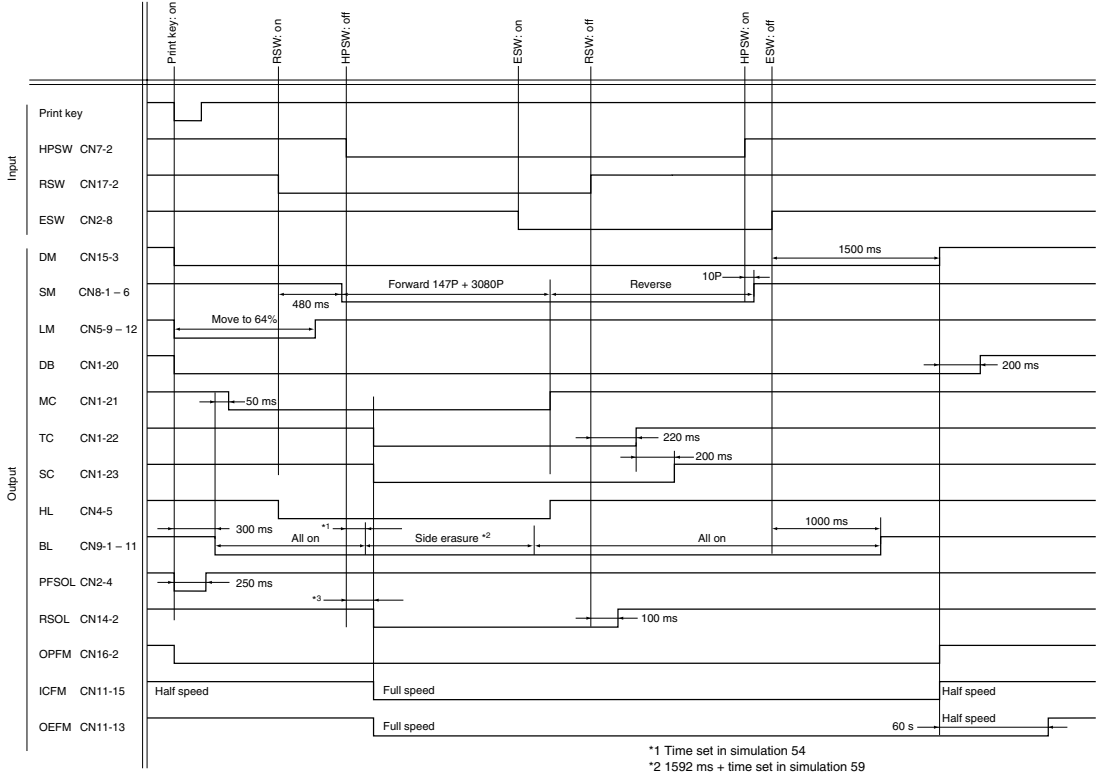


Timing chart No. 2 Copying an A4/11" × 8½" original onto an A4/11" × 8½" copy paper from the paper drawer at magnification ratio 100% by auto exposure



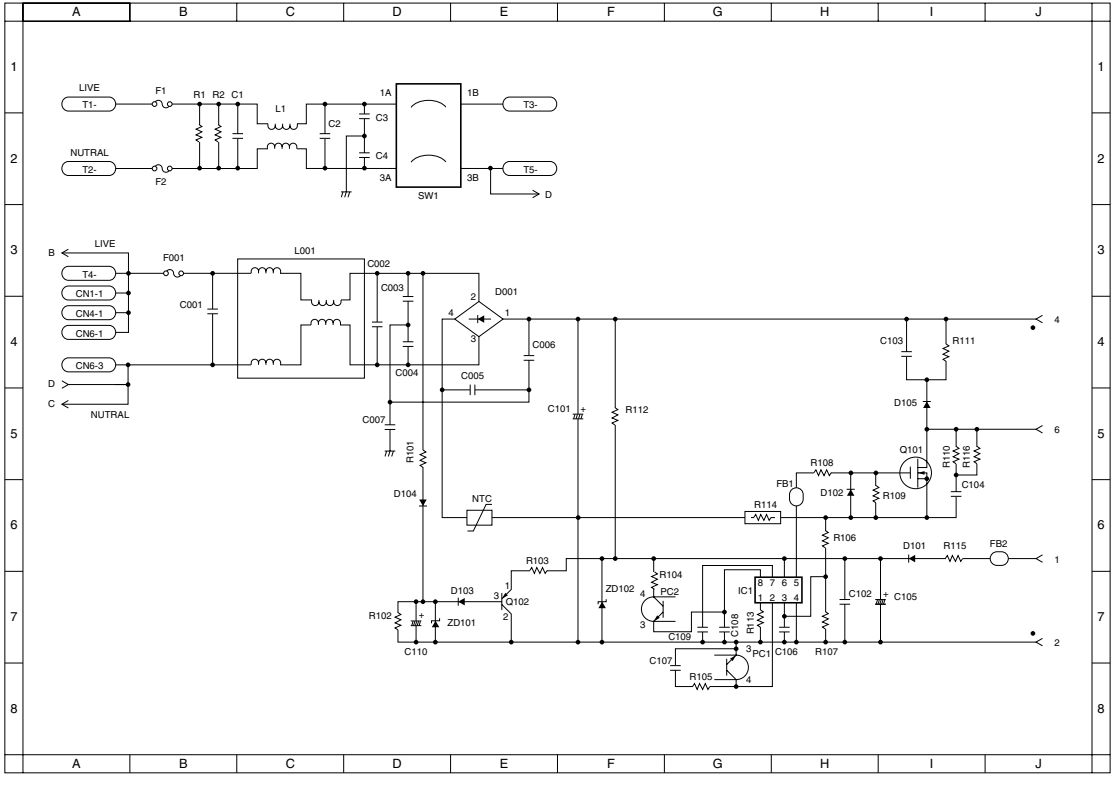
*1 Time set in simulation 54
*2 1038 ms + time set in simulation 59
*3 147 pulses + (time set in simulation 27) × 2

Timing chart No. 3 Copying an A3/11" × 17" original onto an A4R/8$^1/_2$" × 11" copy paper from the bypass table at magnification ratio 64% by manual exposure

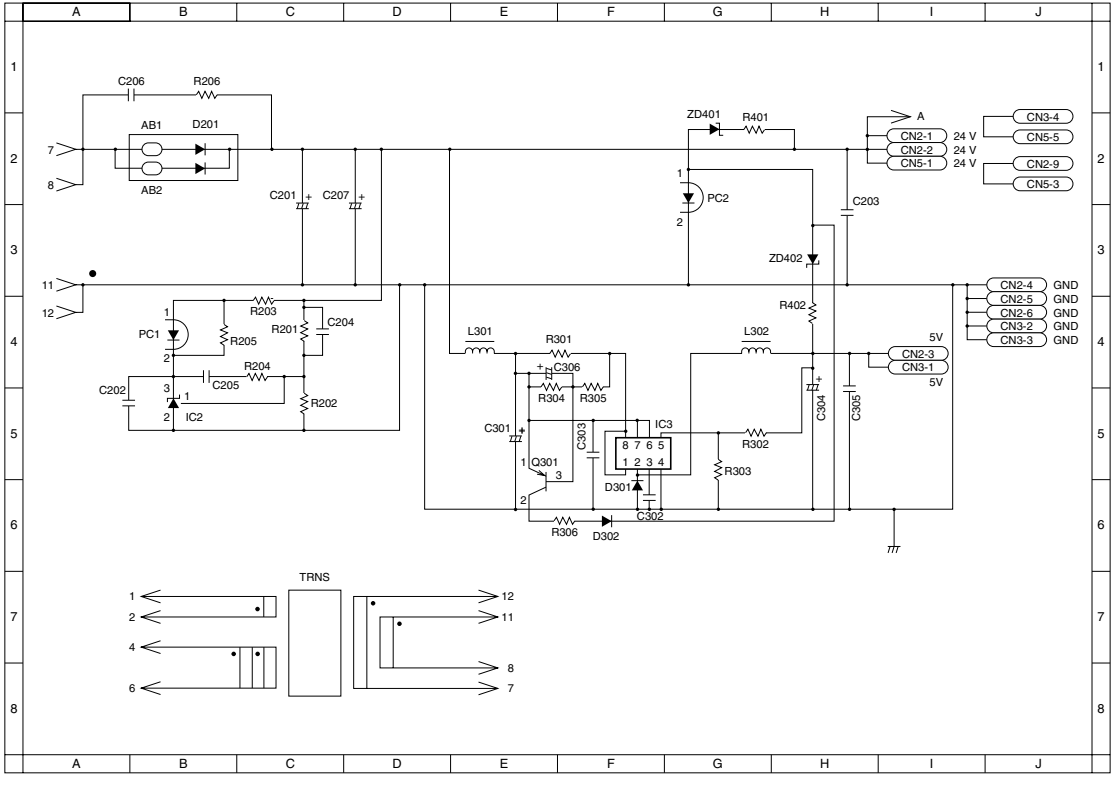


*1 Time set in simulation 54
*2 1592 ms + time set in simulation 59
*3 147 pulses + (time set in simulation 27) × 2

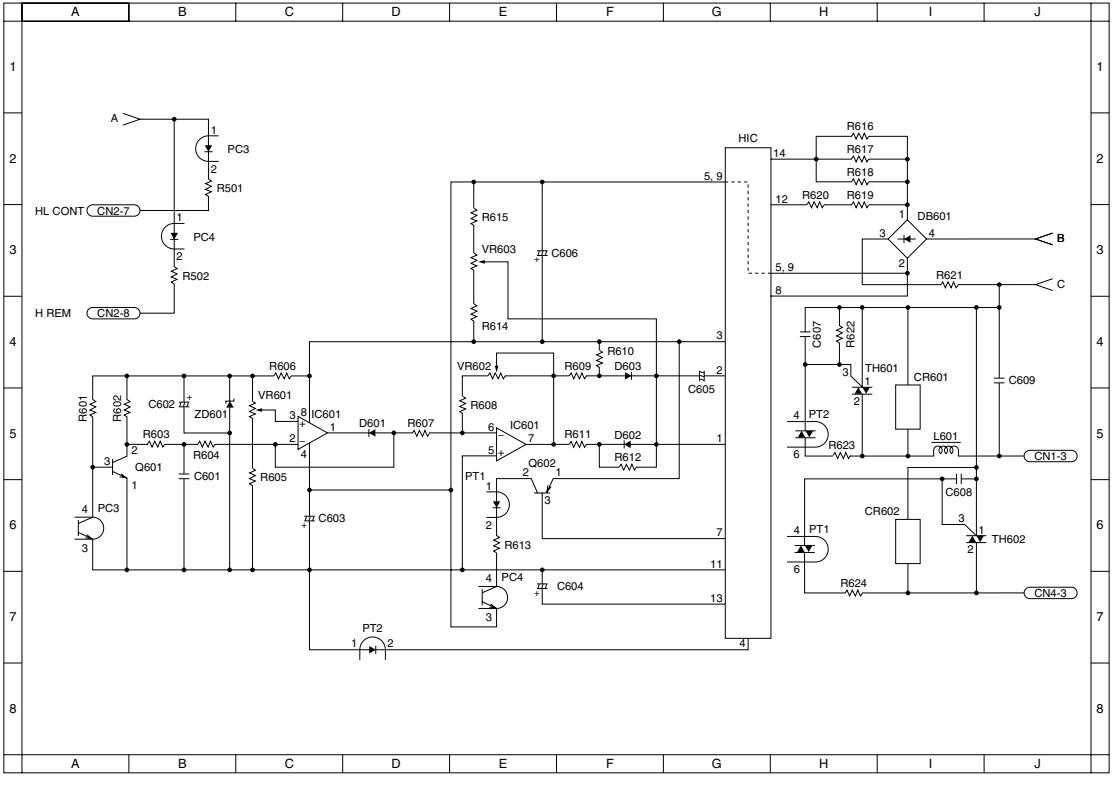
Composite PCB 1/3

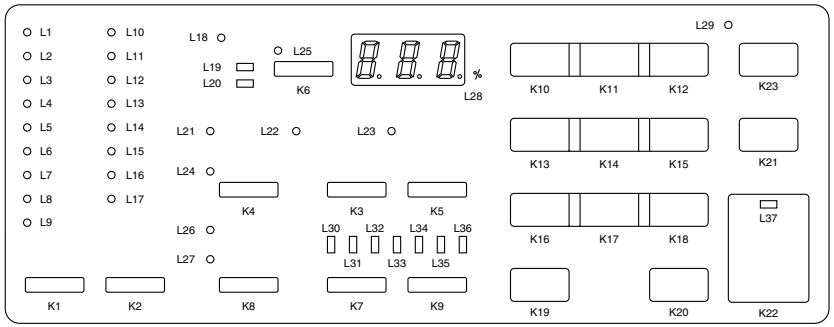


Composite PCB 2/3



Composite PCB 3/3




L1
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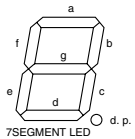
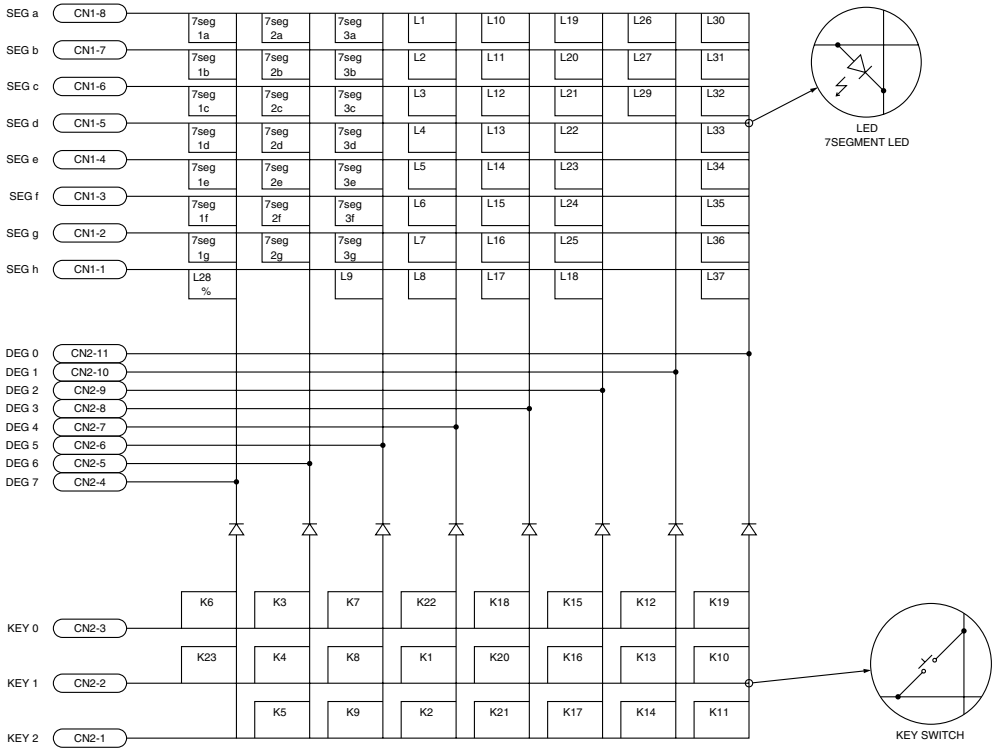

a
b
c
d
e
f
g
d. p.
7SEGMENT LED


SEG a
SEG b
SEG c
SEG d
SEG e
SEG f
SEG g
SEG h
CN1-8
CN1-7
CN1-6
CN1-5
CN1-4
CN1-3
CN1-2
CN1-1
7seg 1a
7seg 2a
7seg 3a
7seg 1b
7seg 2b
7seg 3b
7seg 1c
7seg 2c
7seg 3c
7seg 1d
7seg 2d
7seg 3d
7seg 1e
7seg 2e
7seg 3e
7seg 1f
7seg 2f
7seg 3f
7seg 1g
7seg 2g
7seg 3g
L28 %
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L37
LED
7SEGMENT LED
DEG 0
DEG 1
DEG 2
DEG 3
DEG 4
DEG 5
DEG 6
DEG 7
CN2-11
CN2-10
CN2-9
CN2-8
CN2-7
CN2-6
CN2-5
CN2-4
KEY 0
KEY 1
KEY 2
CN2-3
CN2-2
CN2-1
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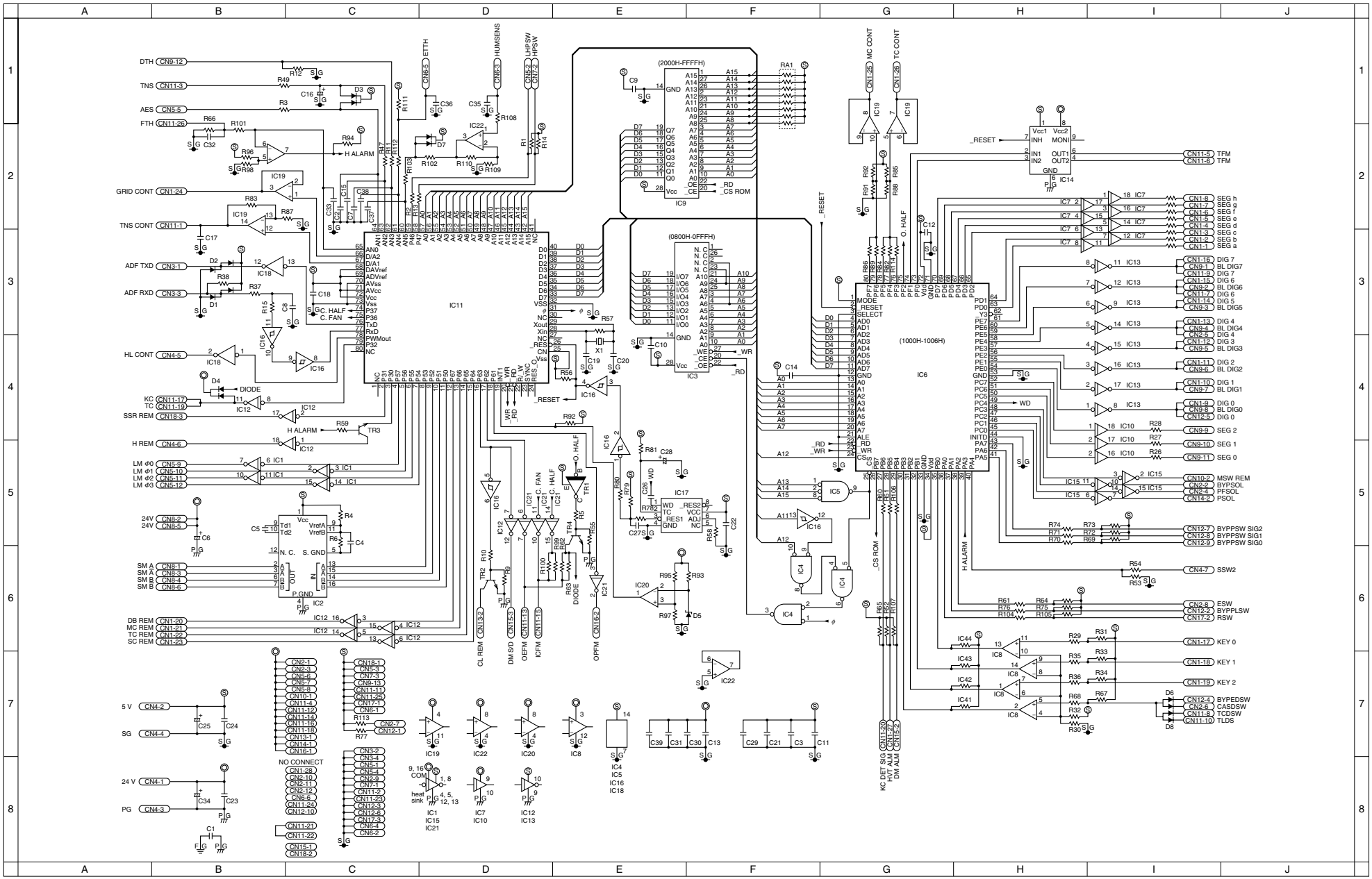
KEY SWITCH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AES CN5-5
FTH CN11-26
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TNS CONT CN11-1
ADF TXD CN3-1
ADF RXD CN3-3
HL CONT CN4-5
KC CN11-17
TC CN11-19
SSR REM CN18-3
H REM CN4-6
LM Φ0 CN5-9
LM Φ1 CN5-10
LM Φ2 CN5-11
LM Φ3 CN5-12
24V CN8-2
24V CN8-5
SM A CN8-1
SM A CN8-3
SM B CN8-4
SM B CN8-6
DB REM CN1-20
MC REM CN1-21
TC REM CN1-22
SC REM CN1-23
5 V CN4-2
SG CN4-4
24 V CN4-1
PG CN4-3
NO CONNECT
H ALARM
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IC11
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(2000H-FFFFH)
(0800H-0FFFH)
(1000H-1006H)
MC CONT
TC CONT
_RESET
_RD
_WR
_CS ROM
CS ROM
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O. HALF
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CL REM
DM SYD
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ICFM
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HUMSENS
ETTH
HPSW
HPRSW
CN11-5 TFM
CN11-6 TFM
SEG h
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SEG c
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MSW REM
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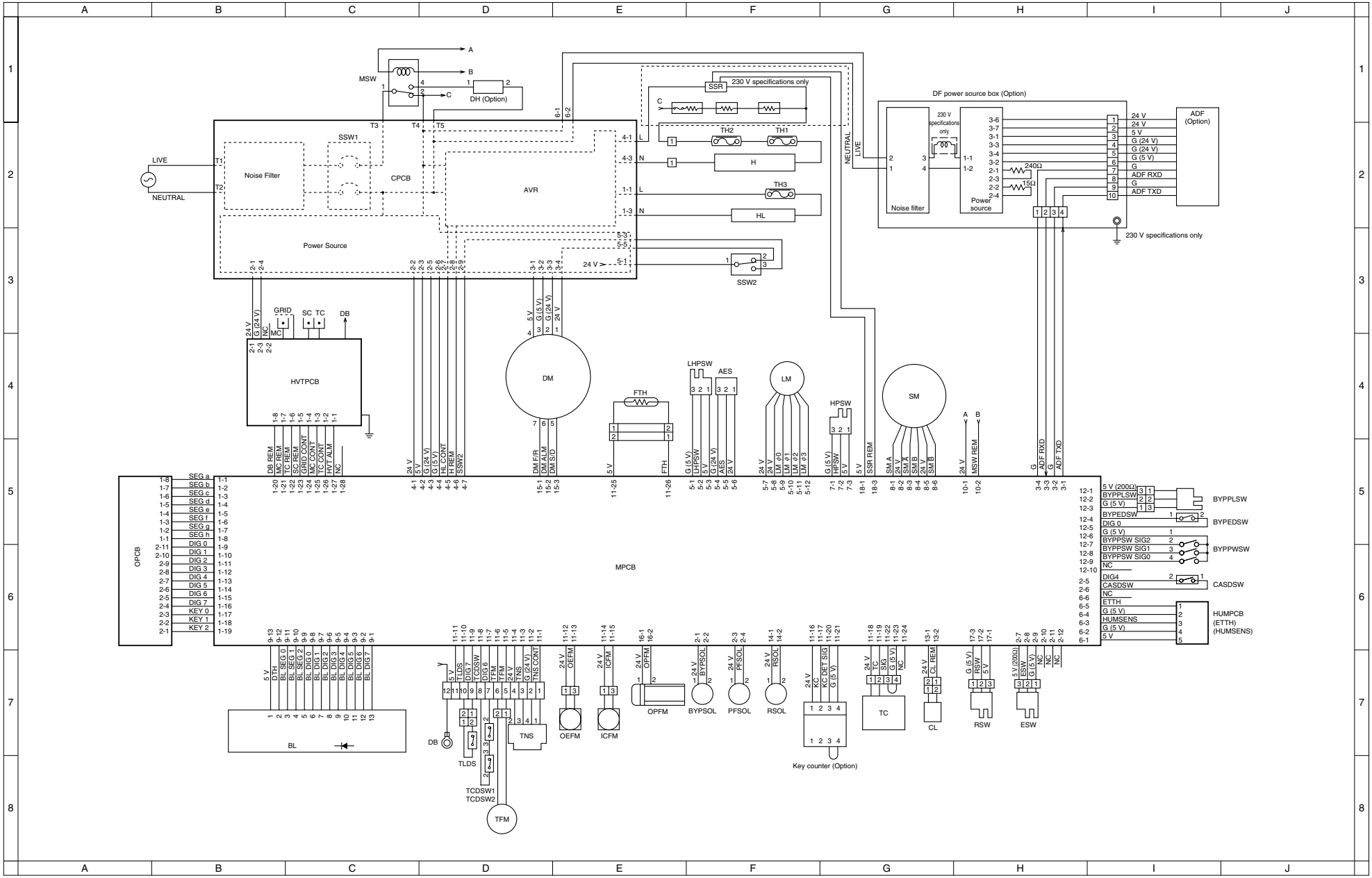
KC DET SIG
HVT ALM
DM ALM


MSW
DH (Option)
SSR
230 V specifications only
DF power source box (Option)
LIVE
NEUTRAL
Noise Filter
CPCB
SSW1
AVR
Power Source
TH1
TH2
TH3
H
HL
SSW2
Noise filter
Power source
240Ω
15Ω
ADF (Option)
24 V
5 V
G (24 V)
G (5 V)
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ADF RXD
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HVTPCB
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HUMPCB (ETTH) (HUMSENS)
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ICFM
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RSOL
Key counter (Option)
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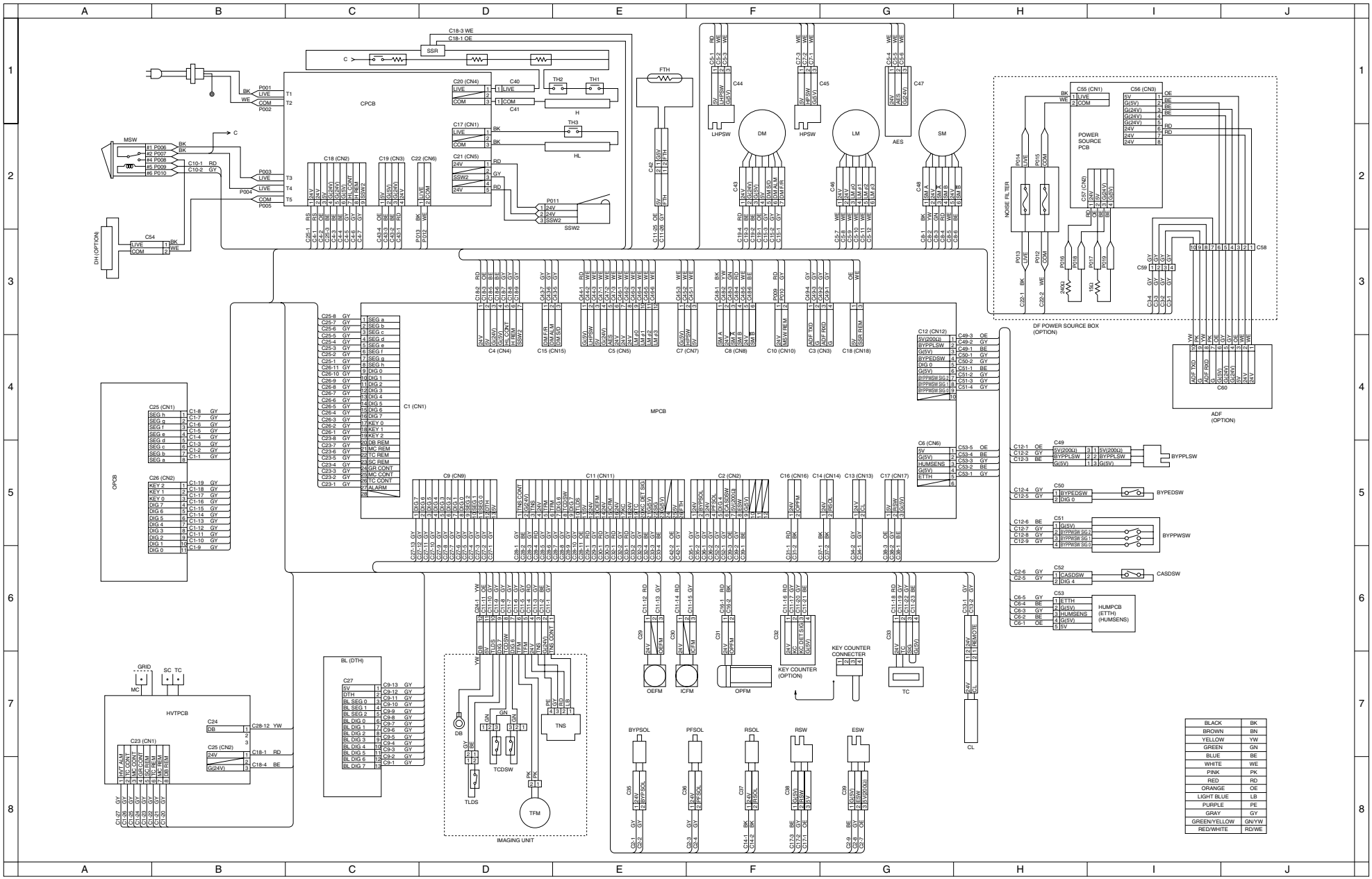
CL
RSW
ESW


MPCB
CPCB
HVTPCB
OPCB
HUMPCB (ETTH) (HUMSENS)
IMAGING UNIT
DF POWER SOURCE BOX (OPTION)
ADF (OPTION)
KEY COUNTER (OPTION)
POWER SOURCE PCB
NOISE FILTER
SSR
FTH
LHPSW
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HPSW
LM
AES
SM
OEFM
ICFM
OPFM
TC
CL
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TCDSW
TLDS
TFM
DB
BYPSOL
PFSOL
RSOL
RSW
ESW
BYPPSLW
BYPEDSW
BYPPWSW
CASDSW
BLACK BK
BROWN BN
YELLOW YW
GREEN GN
BLUE BE
WHITE WE
PINK PK
RED RD
ORANGE OE
LIGHT BLUE LB
PURPLE PE
GRAY GY
GREEN/YELLOW GN/YW
RED/WHITE RD/WE

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FIG.9 IMAGE FORMATION SECTION I (DEVELOPING) *18*
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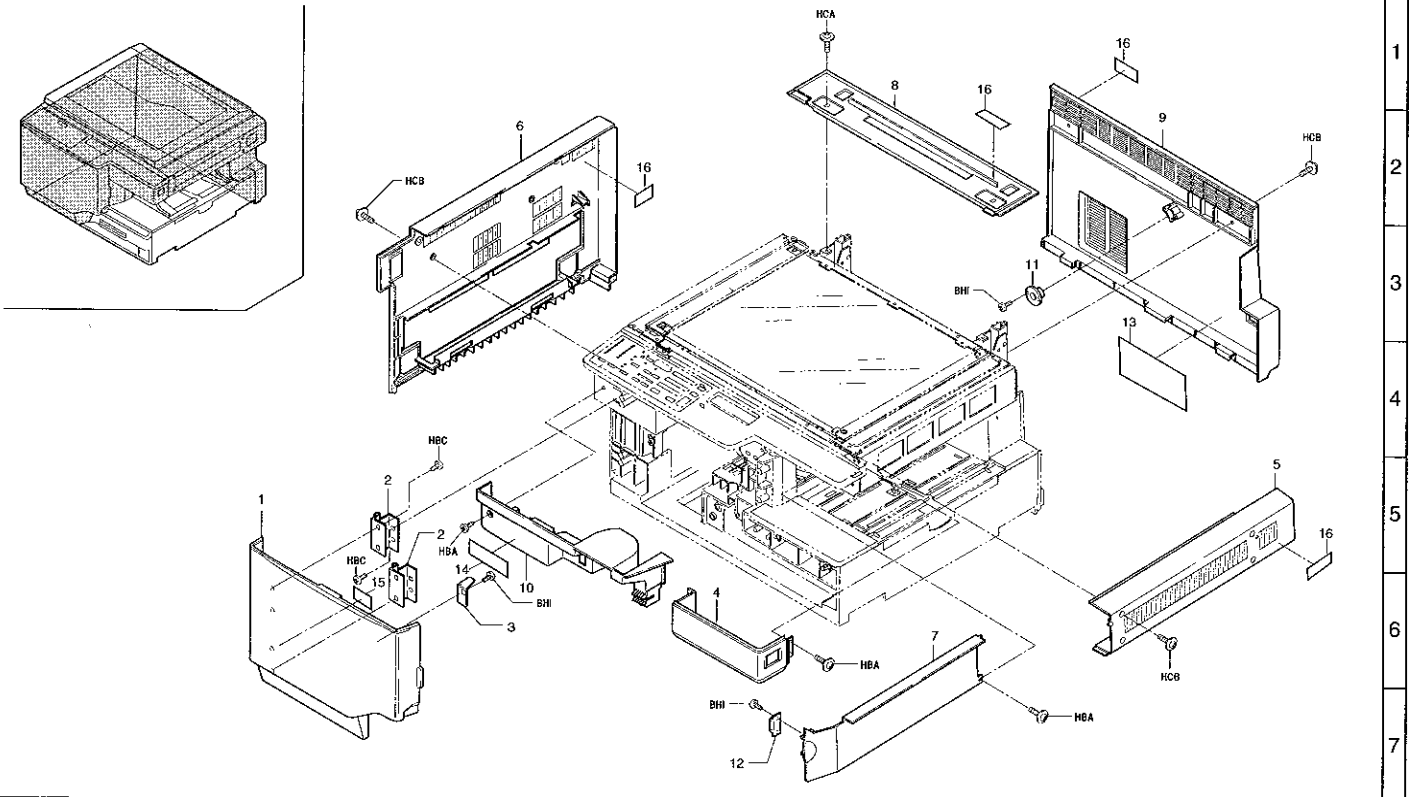
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FIG. 1 EXTERIOR COVERS

Ref. No.	Part. No.	Description	Quantity USA (120V)
1	34904010	FRONT COVER	1
2	34904130	HINGE,RELEASE	2
3	34904150	STOPPER,MAGNET	1
4	34904020	RIGHT FRONT COVER	1
5	34904030	UPPER RIGHT COVER	1
6	34904040	LEFT COVER	1
7	34904050	LOWER RIGHT COVER	1
8	34904070	UPPER REAR COVER	1
9	34904080	REAR COVER	1
10	34904160	INNER FRONT COVER	1
11	34904180	COVER,ADF	1
12	34904190	MAGNET,RELEASE	1
13	34905060	LABEL,SIM	1
14	34905080	LABEL,CONVEYING JAM	1
15	73905191	LABEL,SUPPLY(E,F,S)	1
16	28173600	CAUTION LABEL B	4

• Parts with "•" are component parts or sub-assemblies of the assembly appearing immediately above them.

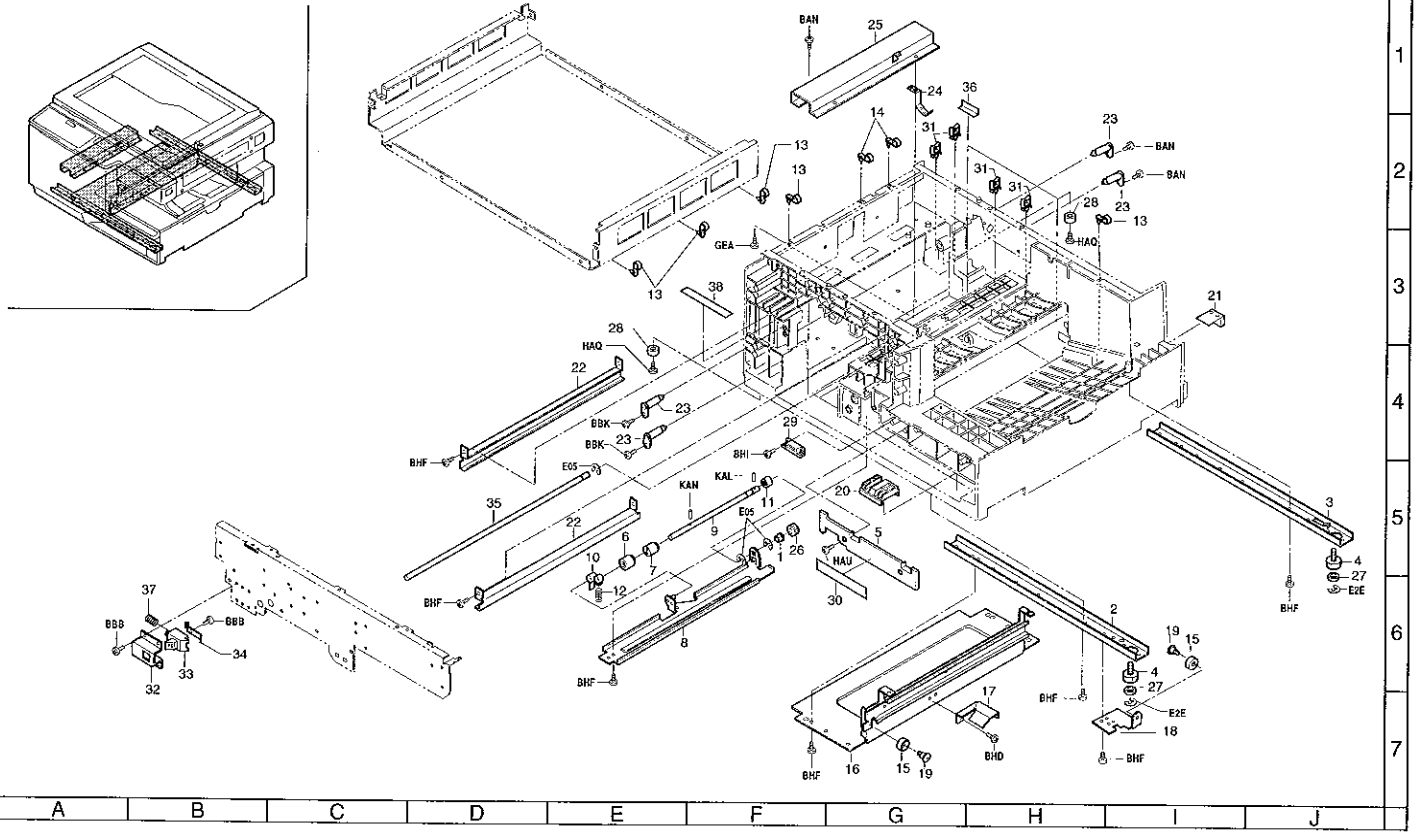
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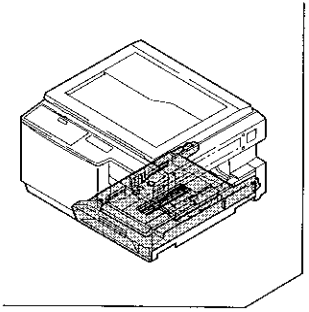
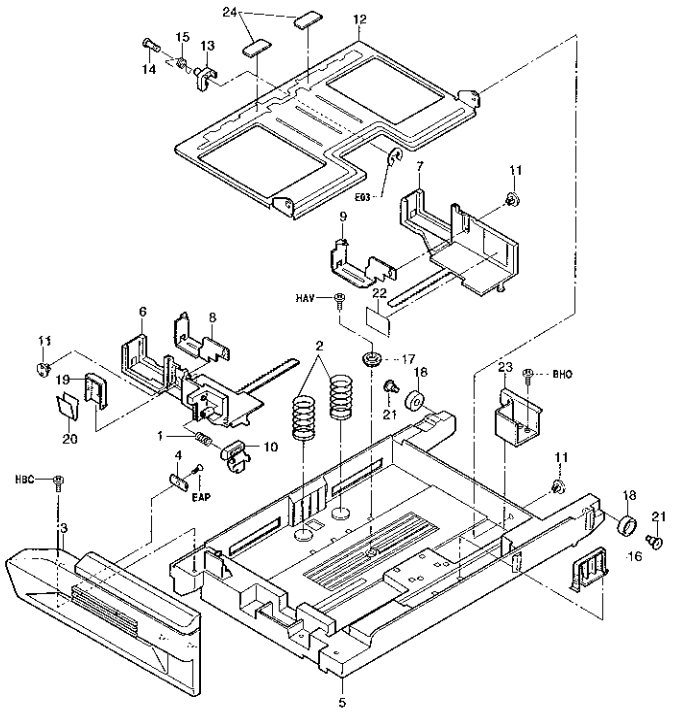
FIG. 2 FRAMES

Ref. No.	Part. No.	Description	Quantity USA (120V)
1	29806810	BUSHING,6 REGISTRATION	1
2	34902020	FRONT REINFORCEMENT,BASE	1
3	34902030	REAR REINFORCEMENT,BASE	1
4	34902050	BOLT,LEVEL	2
5	34904120	INNER COVER,CASSETTE	1
6	34906020	PULLEY,LIMITER	1
7	34906030	TORQUE LIMITER,BYPASS	1
8	34906060	MOUNT,LIMITER	1
9	34906080	SHAFT,LIMITER	1
10	34906090	LEVER,LIMITER	1
11	34906100	COLLAR,POSITIONING	1
12	34906110	SPRING,LIMITER SUPPORT	1
13	M2105930	CLAMP,NAD-04(KITAGAWA)	5
14	M2105940	CLAMP,NAD-06(KITAGAWA)	2
15	34907150	PULLEY,CASSETTE	2
16	34907170	INNER REINFORCEMENT,BASE	1
17	34907180	WORK PLATE,PRESSURE RELEASE	1
18	34907190	RIGHT MOUNT,CASSETTE PULLEY	1
19	34907300	PIN CASSETTE	2
20	34907310	GUIDE,CASSETTE	1
21	34907370	GUIDE B,CASSETTE	1
22	34909080	RAIL,IMAGE FORMATION	2
23	34920230	POSITIONING PLATE,FIXING	4
24	34920270	LOWER GROUND PLATE,FIXING	1
25	34921070	BASE,EJECT TRAY	1
26	34922420	GEAR 15	1
27	65802080	RUBBER,BOLT	2
28	65902670	CUSHION RUBBER	2
29	71804400	MAGNET CATCHER	1
30	34905090	LABEL,PAPER SET	1
31	M2109170	WIRE SADDLE,WS-1NS-V0	4
32	34909060	RETAINER,LEVER	1
33	34909070	LEVER,LOCK	1
34	34909090	GROUND PLATE,IMAGE FORMATION LOCK	1
35	34922270	SHAFT B,SAFETY SWITCH	1
36	34926070	SHEET,WIRE PROTECTION	2
37	65009050	SPRING,DEVELOPING ROCK	1
38	66305090	CAUTION LABEL,HIGH TEMPERATURE L(EXP)	1

• Parts with "•" are component parts or sub-assemblies of the

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EAP
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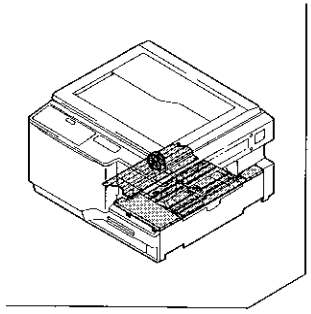
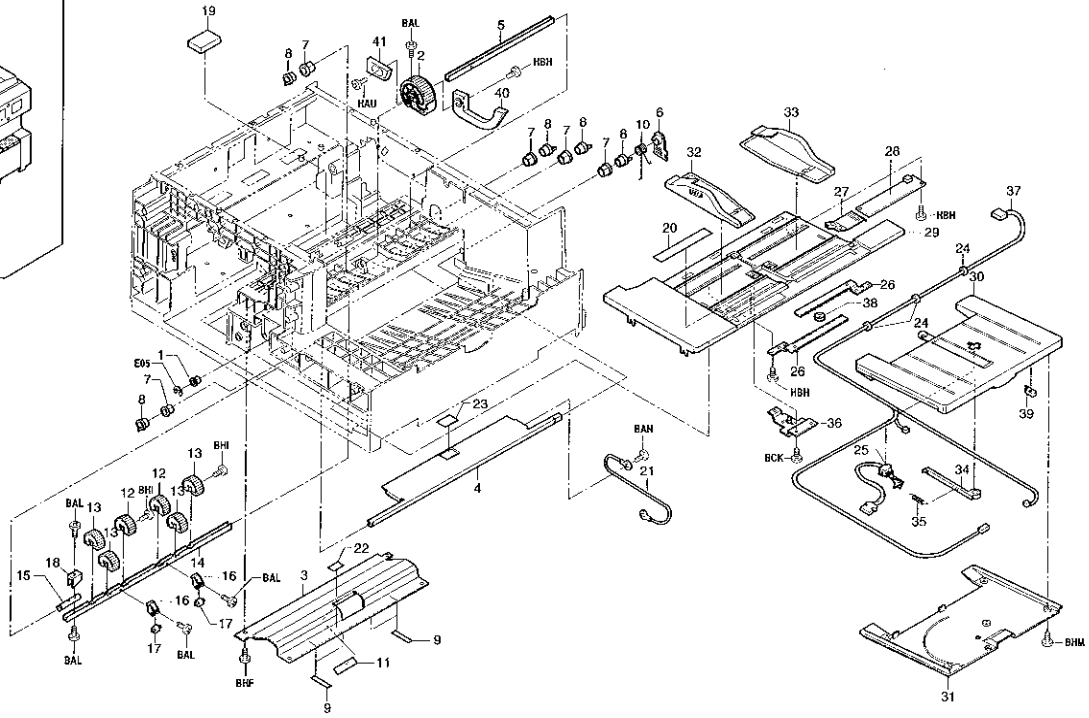
FIG. 3 CASSETTE

Ref. No.	Part. No.	Description	Quantity USA (120V)
	34900120	CASSETTE ASS'Y	1
1	•68802070	SPRING A,LIFT UP	1
2	•28206151	SPRING,CASSETTE B	2
3	•34904090	COVER,CASSETTE	1
4	•34904170	STOPPER,CASSETTE	1
5	•34907010	CASSETTE,PAPER FEED	1
6	•34907020	FRONT CURSOR,CASSETTE	1
7	•34907030	REAR CURSOR,CASSETTE	1
8	•34907040	FRONT CLAW,CASSETTE	1
9	•34907050	REAR CLAW,CASSETTE	1
10	•34907060	LEVER,CURSOR RETAINING	1
11	•34907070	PIN,CLAW CASSETTE	3
12	•34907080	BASE,CASSETTE	1
13	•34907100	LEVER,CASSETTE PRESSURE RELEASE	1
14	•34907110	PIN,PRESSURE RELEASE	1
15	•34907120	SPRING,PRESSURE RELEASE	1
16	•34907130	REAR STOPPER,PAPER	1
17	•34907140	GEAR 18,CASSETTE	1
18	•34907150	PULLEY,CASSETTE	2
19	•34907260	HOLDER,CURSOR	1
20	•34907270	PLATE SPRING,CURSOR	1
21	•34907300	PIN CASSETTE	2
22	•34907330	LABEL,PAPER UPPER LIMIT	1
23	•34907340	REAR STOPPER B,PAPER	1
24	•34907350	PAD A,CASSETTE	2

• Parts with "•" are component parts or sub-assemblies of the

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BHI
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BAL
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BAL
BAL
BHF
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FIG. 4 PAPER FEED-IN SECTION

Ref. No.	Part. No.	Description	Quantity USA (120V)
1	29806810	BUSHING,6 REGISTRATION	1
2	34906010	UPPER PULLEY,BYPASS	1
3	34906040	LOWER GUIDE,BYPASS	1
4	34906050	WORK PLATE,BYPASS LIFT	1
5	34906070	SHAFT,BYPASS PAPER FEED	1
6	34906120	LEVER,BYPASS LIFT	1
7	34906150	INNER BUSHING,PAPER FEED	5
8	34906160	OUTER BUSHING,PAPER FEED	5
9	34906170	FILM,BYPASS GUIDE	4
10	34906180	SPRING,LIFT AUXILIARY	1
11	34906190	FILM,PAPER GUIDE	1
12	34907200	PULLEY A,PAPER FEED	2
13	34907210	PULLEY B,PAPER FEED	4
14	34907220	SHAFT A,CASSETTE PAPER FEED	1
15	34907230	SHAFT B,CASSETTE PAPER FEED	1
16	34907280	SUPPORT PLATE,PULLEY	2
17	34907290	PULLEY,GUIDE	2
18	34907320	GUIDE,PAPER	1
19	34917240	LOWER SPONGE,TRANSFER	1
20	71806550	SIZE INDICATOR,BYPASS(USA)	1
21	34927250	GROUND WIRE,BYPASS LIFT	1
22	71815161	FRONT SEAL,SUB UNIT BLADE	1
23	72907620	FRICTION CLOTH,CASSETTE	1
24	M0207000	BINDING BAND,KB-100-1	3
25	33906990	SWITCH,BYPASS SIZE DETECTION	1
26	33907100	RACK,CASSETTE	2
27	33907110	TERMINAL,PAPER SIZE PCB	1
28	33928110	SIZE DETECTION PCB	1
29	34906200	TABLE,BYPASS	1
30	34906210	TABLE,BYPASS SLIDE	1
31	34906220	COVER,SIZE DETECTION	1
32	34906230	FRONT CURSOR,BYPASS	1
33	34906240	REAR CURSOR,BYPASS	1
34	34906250	SUPPORT PLATE,BYPASS WIRE	1
35	34906260	SPRING,WIRE SUPPORT	1
36	34906270	ADJUSTING PLATE,BYPASS	1
37	34927160	WIRE,BYPASS	1
38	65914120	GEAR 18,IDLE DEVELOPING	1
39	76727010	ORIGINAL SIZE SWITCH	1
40	34906290	STOPPER,PAPER SET	1
41	34906300	SLIDER,BYPASS PAPER FEED	1

• Parts with "•" are component parts or sub-assemblies of the

FIG. 5 PAPER CONVEYING SECTION

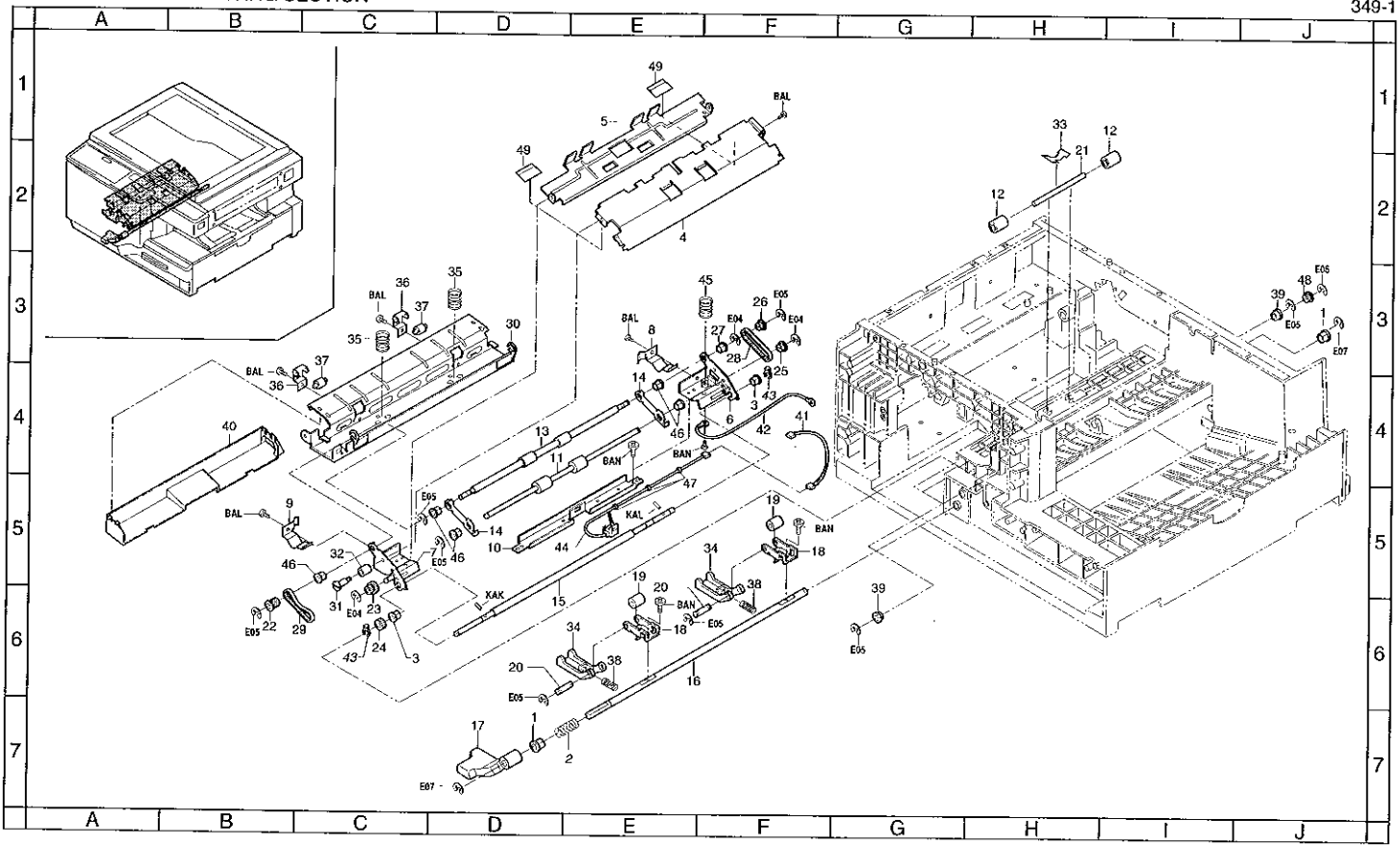
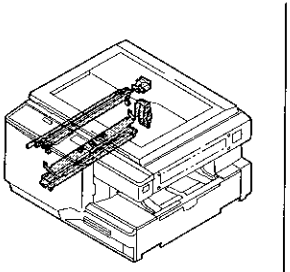


FIG. 5 PAPER CONVEYING SECTION

Ref. No.	Part. No.	Description	Quantity USA (120V)
1	49028112	BUSHING 8,LOWER REG.ROLLER	2
2	*34916510*	*SPRING,LEVER*	*1*
3	29806810	BUSHING,6 REGISTRATION	2
4	34916010	GUIDE,REGISTRATION	1
5	34916020	SHUTTER,REGISTRATION	1
6	34916030	REAR FRAME,REGISTRATION	1
7	34916040	FRONT FRAME,REGISTRATION	1
8	34916050	REAR PLATE SPRING,REGISTRATION UNIT	1
9	34916060	FRONT PLATE SPRING,REGISTRATION UNIT	1
10	34916080	SUPPORT PLATE,REGISTRATION SWITCH	1
11	34916090	LOWER ROLLER,REGISTRATION	1
12	34916100	UPPER PULLEY,REGISTRATION	2
13	34916110	LOWER FRONT ROLLER,TRANSFER	1
14	34916140	REAR ARM,REGISTRATION ROLLER	2
15	34916150	SHAFT,REGISTRATION FULCRUM	1
16	34916160	SHAFT,JAM FULCRUM	1
17	34916180	LEVER,JAM FULCRUM	1
18	34916190	HOLDER,REGISTRATION	2
19	34916200	PULLEY,HOLDER	2
20	34916210	SHAFT,HOLDER	2
21	34916230	SHAFT,ROLLER	1
22	34916270	PULLEY 15	1
23	34916280	GEAR 15/30	1
24	34916290	GEAR 25	1
25	34916300	REAR PULLEY 15	1
26	34916310	PULLEY 20	1
27	34916320	BUSHING 5	1
28	34916330	BELT,REGISTRATION	1
29	34916340	BELT,FEED	1
30	34916360	GUIDE,CONVEYING	1
31	34916370	PIN,REGISTRATION	1
32	34916380	COLLAR,REGISTRATION	1
33	34916390	PLATE SPRING,REGISTRATION PULLEY	1
34	34916420	LOWER ARM,TRANSFER	2
35	34917130	SPRING,TRANSFER LIFT	2
36	34917160	HOLDER,TRANSFER CHARGER	2
37	34917170	PULLEY,TRANSFER HOLDER	2
38	34920220	SPRING,PRESSURE	2
39	34922480	BEARING,REGISTRATION FULCRUM	2
40	34923040	DUCT C,OZONE	1
41	34927120	WIRE,REGISTRATION	1
42	34927240	GROUND WIRE,REGISTRATION	1
43	*34806150*	*STOPPER 5*	*2*
44	71821491	SWITCH,FEED SHIFT	1
45	72107210	SPRING,BYPASS SOLENOID	1
46	73210450	BUSH, 6	5
47	M0207000	BINDING BAND,KB-100-1	3
48	34922460	PULLEY 16	1
49	34916490	SEAL,REGISTRATION GUIDE	2

• Parts with "•" are component parts or sub-assemblies of the assembly appearing immediately above them.



Be sure to order the tungsten wire Ref. No. 3 by the 100 meters spool (41626652)

Be sure to order the tungsten wire Ref. No. 30 by the 50 meters spool (42929503)

FIG. 6 IMAGE FORMATION SECTION

Ref. No.	Part. No.	Description	Quantity USA (120V)
1	34910100	MOUNT,BLANK LAMP	1
2	34993010	PARTS MAIN CHARGER ASS'Y(SP)	1
3	•41626852	TUNGSTEN WIRE	1 spl
4	*•34968260*	*FRONT MAIN CHARGER HOUSING ASS'Y*	*1*
5	••34817160	PIN,CHARGER	1
6	••34910010	FRONT HOUSING,MAIN CHARGER	1
7	••34910110	FRONT LID,MC	1
8	•34910030	SHIELD,MAIN CHARGER	1
9	•34993130	PARTS GRID(SP)	1
10	•34910050	TENSION PLATE,GRID	1
11	•34910180	KNOB,CHARGE CLEANING	1
12	•34910080	SEAL,CLEANING LAMP	1
13	•34910190	SPRING,CHARGE CLEANING	1
14	•77616110	PAD TC CLEANING	2
15	•34910150	HOLDER,CHARGE CLEANING	2
16	•34910160	SHAFT,CHARGE CLEANING	1
17	•34910170	SLIDER,CHARGE CLEANING	1
18	*•34993910*	*SET REAR CHARGER HOUSING*	*1*
19	••34910060	HOOK,MC WIRE	1
20	••34910120	REAR LID,MC	1
21	••48527200	SPRING,CHARGER	1
22	••34910020	REAR HOUSING,MAIN CHARGER	1
23	34917140	STOPPER,TRANSFER CHARGER	1
24	34917150	PLATE SPRING,TRANSFER STOPPER	1
25	34927031	LAMP,CLEANING	1
26	34927210	WIRE,BLANK	1
27	34927220	WIRE,CLEANING LAMP	1
28	34910090	MOUNT,CLEANING LAMP	1
29	34993080	PARTS TRANSFER CHARGER ASS'Y(SP)	1
30	•42929503	TUNGSTEN WIRE(50M)	1 spl
31	•34917030	SHIELD,TRANSFER	1
32	•34917070	PARTITION,TRANSFER SHIELD	1
33	*•34968280*	*FRONT TRANSFER CHARGER HOUSING ASS'Y*	*1*
34	••34817160	PIN,CHARGER	2
35	••34917010	FRONT HOUSING,TRANSFER	1
36	••34917040	FRONT LID,TC	1
37	••67305310	CAUTION LABEL,HV	1
38	*•34993900*	*SET REAR TRANSFER CHATGER HOUSING*	*1*
39	••34917050	REAR LID,TC	1
40	••34917060	HOOK,WIRE	2
41	••48527200	SPRING,CHARGER	2
42	••34917020	REAR HOUSING,TRANSFER	1
43	•34917200	GUIDE,SEPARATION	1
44	•34917210	SPACER,TRANSFER CHARGER	2
45	•34917220	LOWER FRONT SEAL,TRANSFER	1
46	•34917080	GUIDE FILM,TRANSFER	1
47	34900180	MAIN CHARGER CONNECTOR ASS'Y	1
48	•34910070	HOUSING,MC TERMINAL BASE	1
49	•34910130	SPRING,MC TERMINAL BASE	1
50	•34910140	PLATE SPRING,MC TERMINAL BASE	1
51	•34927310	WIRE,MAIN HIGH VOLTAGE	1
52	•66227260	WIRE,GRID	1
53	34900190	TRANSFER CHARGER CONNECTOR ASS'Y	1
54	•34917090	HOUSING,TC TERMINAL BASE	1
55	•34917100	PLATE SPRING,CONNECTOR TRANSFER	1
56	•34917110	PLATE SPRING,CONNECTOR SEPARATION	1
57	•34917120	LID,TRANSFER CONNECTOR HOUSING	1
58	•34927320	WIRE,TRANSFER HIGH VOLTAGE	1
59	•34927330	WIRE,SEPARATION HIGH VOLTAGE	1
60	34900080	UPPER FRONT TRANSFER GUIDE ASS'Y	1
61	34917250	LOWER FRONT GUIDE,TRANSFER	1
62	34926080	SEAL,LIGHT SHIELD BLANK LAMP	1
63	34927020	LAMP,BLANK	1

• Parts with "•" are component parts or sub-assemblies of the assembly appearing immediately above them.

• Parts with "• •" are component parts of the sub-assembly

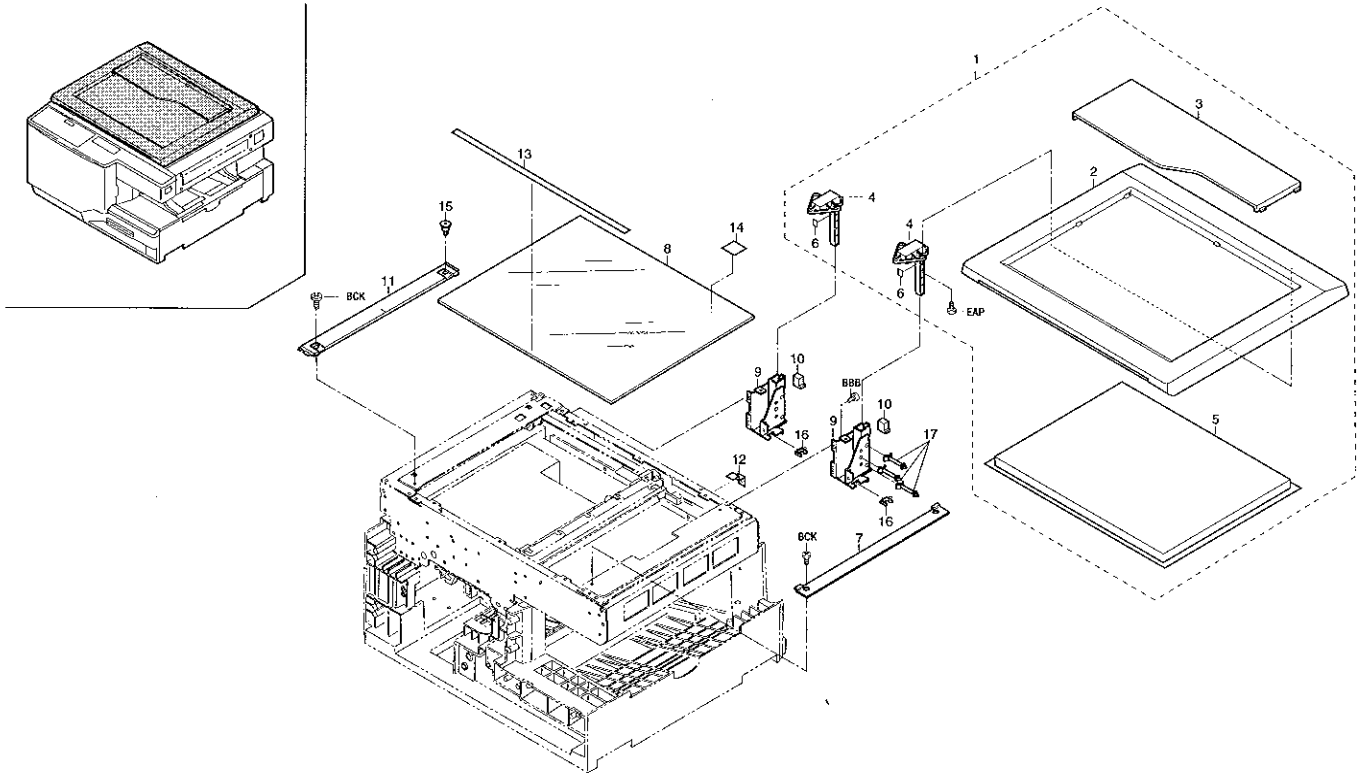

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FIG. 7 ORIGINAL SET SECTION

Ref. No.	Part. No.	Description	Quantity USA (120V)
1	34900090	ORIGINAL HOLDER ASS'Y	1
2	•34904100	COVER,ORIGINAL	1
3	•34904110	COVER,PLATEN	1
4	•75704290	HINGE ORIGINAL HOLDER	2
5	•75704450	MAT ORIGINAL HOLDER(USA)	1
6	•79904140	ORIGINAL HOLDER SPACER	2
7	34904060	HOLDER,CONTACT GLASS	1
8	34912030	CONTACT GLASS	1
9	34912040	MOUNT BASE,ORIGINAL HOLDER	2
10	34912050	SPACER,MOUNT BASE ORIGINAL	2
11	34912110	ORIGINAL SIZE INDICATOR,ORIGINAL (INCH)	1
12	34960260	GROUND PLATE,CONTACT GLASS	1
13	66012390	FRONT SIZE INDICATION PLATE(INCH)	1
14	61712870	TAPE,CONTACT GLASS	1
15	67312250	PIN,ORIGINAL INDICATION PLATE	1
16	M2104210	EDGING,EDS-2	2
17	M2108040	SPACER,KGLS-14S	3

• Parts with "•" are component parts or sub-assemblies of the

FIG. 8 OPTICAL SECTION

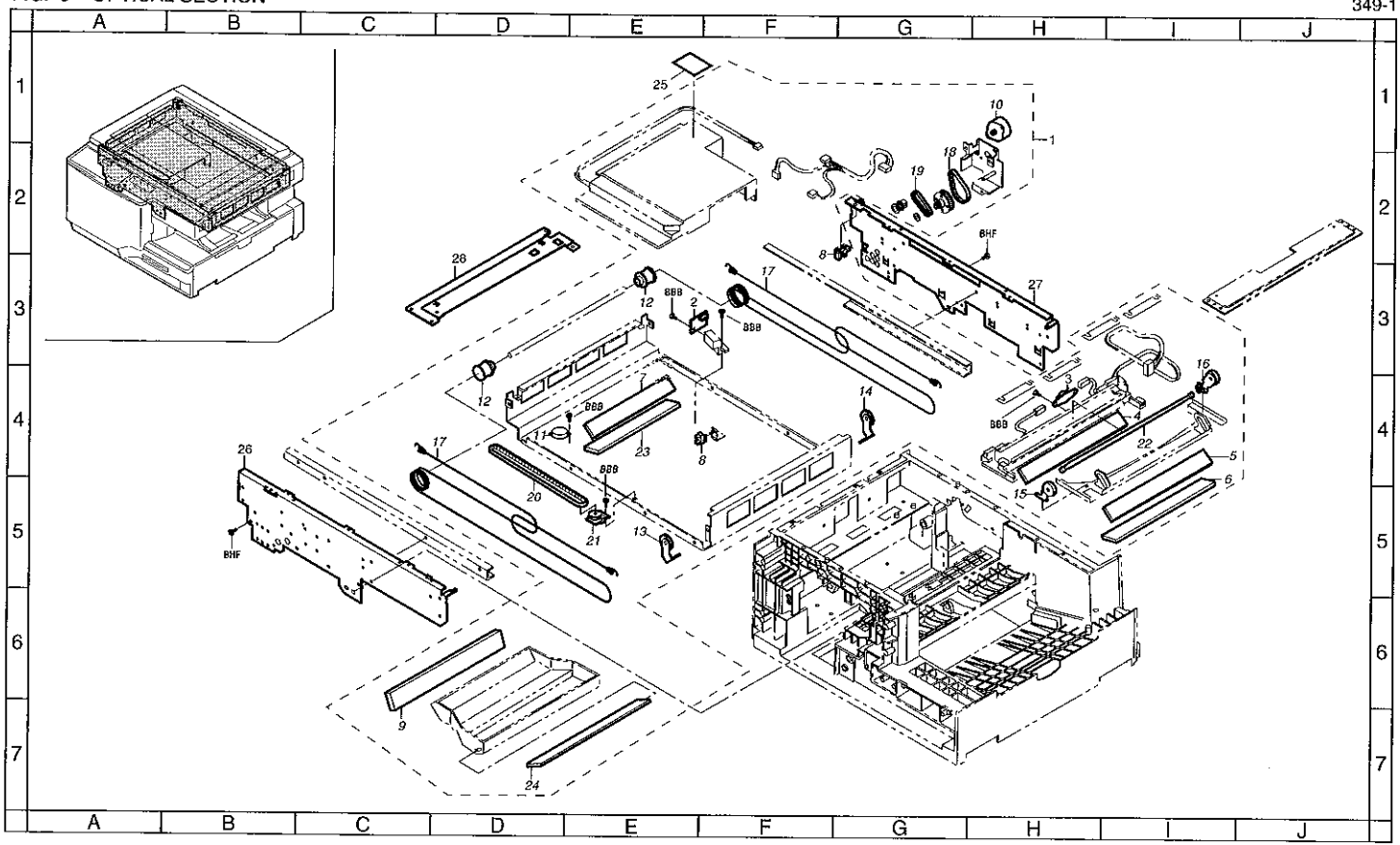
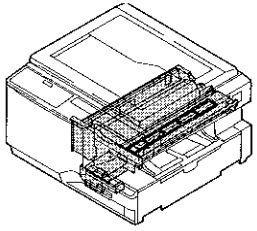


FIG. 8 OPTICAL SECTION

Ref. No.	Part. No.	Description	Quantity USA (120V)
1	34993060	PARTS SCANNER UNIT ASS'Y 100(SP)	1
2	•34928070	AE SENSOR PCB	1
3	•69312020	THERMAL PROTECTOR,SCANNER	1
4	•34968200	MIRROR 1	1
5	•34968210	MIRROR 2	1
6	•34968220	MIRROR 3	1
7	•34968230	MIRROR 4	1
8	•34968030	SENSOR,POSITION DETECTION	2
9	•34968040	GLASS,COVER	1
10	•34968050	MOTOR,SCANNER DRIVE	1
11	•34968060	MOTOR,LENS DRIVE	1
12	•34968070	DRUM,SCANNER WIRE	2
13	•34968080	FRONT PULLEY,SCANNER WIRE	1
14	•34968090	REAR PULLEY,SCANNER WIRE	1
15	•34968100	FRONT PULLEY 2/3,MIRROR FRAME	1
16	•34968110	REAR PULLEY 2/3,MIRROR FRAME	1
17	•34968120	WIRE,SCANNER	2
18	•34968140	BELT,SCANNER MOTOR	1
19	•34968150	BELT,SCCANNER DRIVE	1
20	•34968160	BELT,LENS DRIVE	1
21	•34968170	PULLEY,TENSION	1
22	•34968180	LAMP 100	1
23	•34968240	MIRROR 5	1
24	•34968250	MIRROR 6	1
25	68305110	CAUTION LABEL,CONTACT GLASS	1
26	34929300	FRONT FRAME,SCANNER	1
27	34929310	REAR FRAME,SCANNER	1
28	34929320	UPPER LEFT REINFORCEMENT,SCANNER	1

• Parts with "•" are component parts or sub-assemblies of the

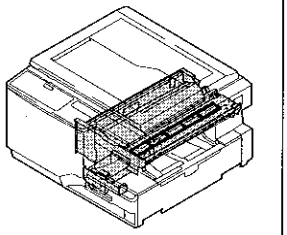


*The unit Ref. No. 1 is figured also in FIG. 10.
*Parts No. 100–112 cannot be replaced separately. When the replacement is necessary, change the unit Ref. No. 1 totally.

FIG. 9 IMAGE FORMATION SECTION I (DEVELOPING)

Ref. No.	Part. No.	Description	Quantity USA (120V)
1	*34968300*	*IMAGE FORMATION ASS'Y SP*	*1*
2	•34914030	LEFT SPIRAL,DEVELOPING	1
3	•34914040	RIGHT SPIRAL,DEVELOPING	1
4	•34914080	RAIL,LID DEVELOPING	4
5	•34914100	SHAFT,IMAGE FORMATION HANDLE	1
6	•34914110	SPRING,IMAGE FORMATION HANDLE	1
7	•34914120	MOUNT BASE,HANDLE	2
8	•34914130	STOPPER,DEVELOPING	1
9	•34914140	UPPER LID,DEVELOPING	1
10	•34914170	UPPER SEAL,LID	1
11	•34914180	FRONT LID,DEVELOPING	1
12	•34914200	GEAR 19,IDLE DEVELOPING	1
13	•34914210	GEAR 17,MAGNET ROLLER	1
14	•34914240	SEAL,DEVELOPING	2
15	•34914270	UPPER SEAL,DEVELOPING	1
16	•34914310	FRONT SEAL,LID	1
17	•33914190	TONER SENSOR	1
18	•34914330	LEFT SEAL,LID	2
19	•34914360	FRONT BUSHING,SPIRAL	2
20	•34914390	LEFT FILM,DEVELOPING SPIRAL	1
21	•34914400	GEAR 28,DEVELOPING	1
22	•34914410	GEAR 31,DEVELOPING	1
23	•34918080	GEAR 31,THRUST	1
24	•72114320	PIN,DEV.UNIT HANDLE	2
25	•72114331	HANDLE,BELT DEV.UNIT	1
26	•75122090	GEAR , FRONT	1
27	•34914430	REAR FILM,DEVELOPING	1
28	•34993170	PARTS COVER DOCTOR BLADE(SP)	1
29	•34914160	FILM,DEVELOPING	1
30	•34914250	SEAL,COVER DOCTOR BLADE	2
31	•34914350	LOWER SEAL,DEVELOPING	1
32	•34914420	LOWER SEAL,DEVELOPING HOUSING	2
33	*•45592554*	*BEARING 688ADD*	*1*
34	34914380	STOPPER,IMAGE FORMATION	1
35	34982060	DRUM FOR DC1560(USA)	1
36	34908050	SHAFT,DRUM	1

• Parts with "•" are component parts or sub-assemblies of the



*The unit Ref. No. 1 is figured also in FIG. 9.
*Parts No. 100–118 cannot be replaced separately. When the replacement is necessary, change the unit Ref. No. 1 totally.

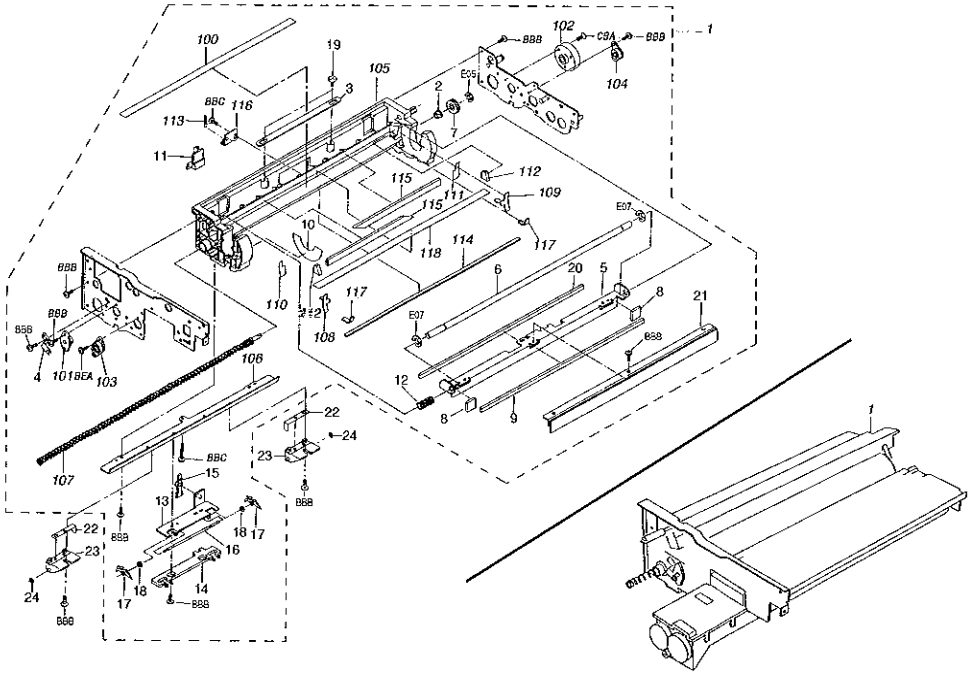
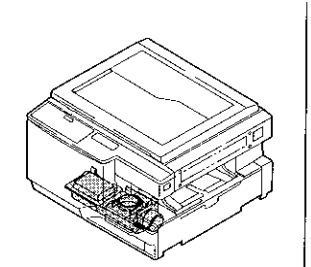


FIG. 10 IMAGE FORMATION SECTION II (CLEANING)

Ref. No.	Part. No.	Description	Quantity USA (120V)
1	*34968300*	*IMAGE FORMATION ASS'Y SP*	*1*
2	•29806810	BUSHING,6 REGISTRATION	1
3	•72114331	HANDLE,BELT DEV.UNIT	1
4	•34909050	FRONT GROUND PLATE,DRUM DRIVE	1
5	•34918310	MOUNT 23,BLADE	1
6	•34918050	SHAFT,THRUST	1
7	•34918090	GEAR 19,DISPOSAL	1
8	•34918120	SPONGE,CLEANING	2
9	•34918130	INNER SPONGE,CLEANING	1
10	•34918170	SPACER,DRUM	1
11	•34918180	LEVER,PRESSURE RELEASE	1
12	•34918200	SPRING,THRUST	1
13	•34918240	MOUNT,SEPARATION SEPARATION CLAW	1
14	•34918250	SLIDE PLATE,SEPARATION CLAW	1
15	•34918260	LEVER,SEPARATION SEPARATION CLAW	1
16	•34918270	SHAFT,SEPARATION CLAW	1
17	•62218011	SEPARATION CLAW	2
18	•62218020	RATCHET,SEPARATION	2
19	•72114320	PIN,DEV.UNIT HANDLE	2
20	•34918340	UPPER SPONGE,CLEANING	1
21	•34993370	PARTS BLADE 23 CLEANING(SP)	1
22	34918350	HOLDER,SEPARATION PULLEY	2
23	34918360	MOUNT,SEPARATION PULLEY	2
24	33418270	PULLEY,SEPARATION CLAW	2

• Parts with "•" are component parts or sub-assemblies of the



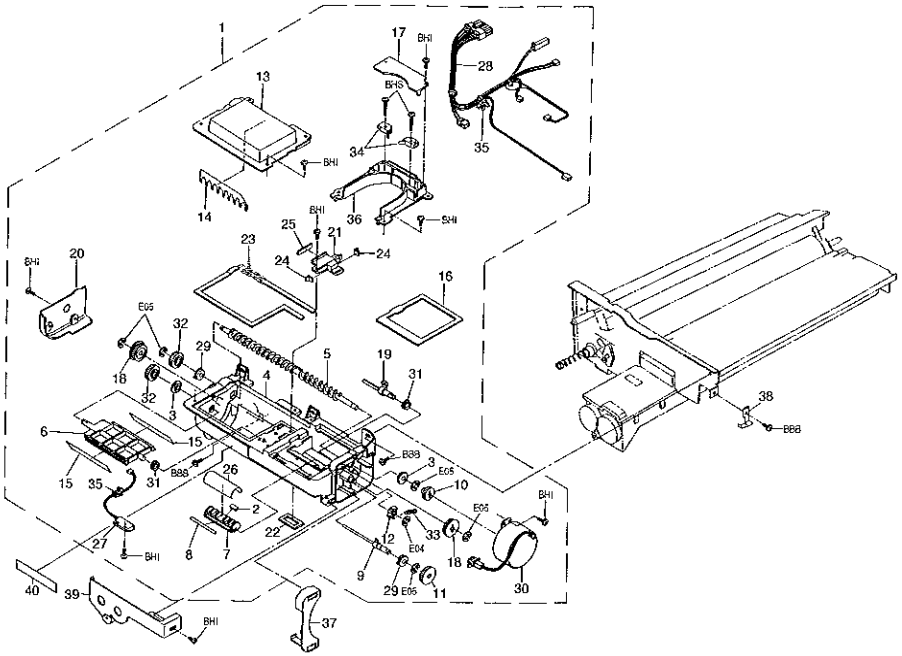

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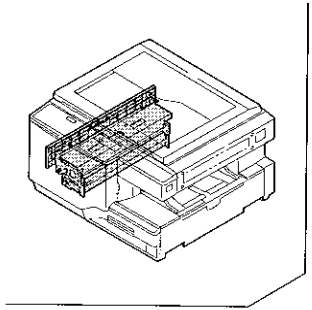
FIG. 11 TONER HOPPER SECTION

Ref. No.	Part. No.	Description	Quantity USA (120V)
1	34993020	PARTS HOPPER ASS'Y(N.A)SP	1
2	•49927306	MS MAGNET (S)	1
3	•49028116	BUSHING 6,CLEANING UNIT	2
4	•34915010	HOUSING,HOPPER	1
5	•34915020	SPIRAL,HOPPER	1
6	•34915030	PADDLE A,HOPPER	1
7	•34915040	PADDLE B,HOPPER	1
8	•34915050	WEIGHT B,PADDLE	1
9	•34915060	SHAFT B,PADDLE	1
10	•34915070	GEAR 15,SPIRAL	1
11	•34915080	GEAR 22,PADDLE	1
12	•34915090	CAM,HOPPER	1
13	•34915110	LEFT LID,HOPPER	1
14	•34915120	FILM,SPIRAL	1
15	•34915130	FILM A,PADDLE	2
16	•34915140	RIGHT SEAL,HOPPER	1
17	•34915160	RIGHT COVER,LID HOPPER	1
18	•34915190	GEAR 20,HOPPER	2
19	•34915200	SHAFT,VIBRATION	1
20	•34915210	LEFT COVER,HOPPER	1
21	•34915220	INNER LID,HOPPER	1
22	•34915230	LOWER SEAL,HOPPER	1
23	•34915240	LEFT SEAL,HOPPER	1
24	•34915250	INNER SEAL,LID HOPPER	2
25	•34915260	LEFT SEAL,LID HOPPER	1
26	•34915270	FILM B,PADDLE	1
27	•34927050	SENSOR,REMAINING DETECTION	1
28	•34927150	WIRE,IMAGE FORMATION UNIT	1
29	•63818250	REAR BUSHING,TONER DISPOSAL ROLLER	2
30	•66015200	TONER MOTOR	1
31	•72114870	V-RING 6 DIA	2
32	•72418410	GEAR 18, SPIRAL	2
33	•34915150	RIGHT LID M,HOPPER (N.A.)	1
34	•76727010	ORIGINAL SIZE SWITCH	2
35	•M2107120	BINDING BAND SG-130	2
36	•34915300	SPRING,HOPPER CAM	1
37	34915290	PROTECTING PLATE,HOPPER	1
38	34915280	GROUND PLATE H,TONER MOTOR	1
39	34915180	LOWER COVER,HOPPER	1
40	29705100	CAUTION LABEL,DRUM	1

• Parts with "•" are component parts or sub-assemblies of the assembly appearing immediately above them.



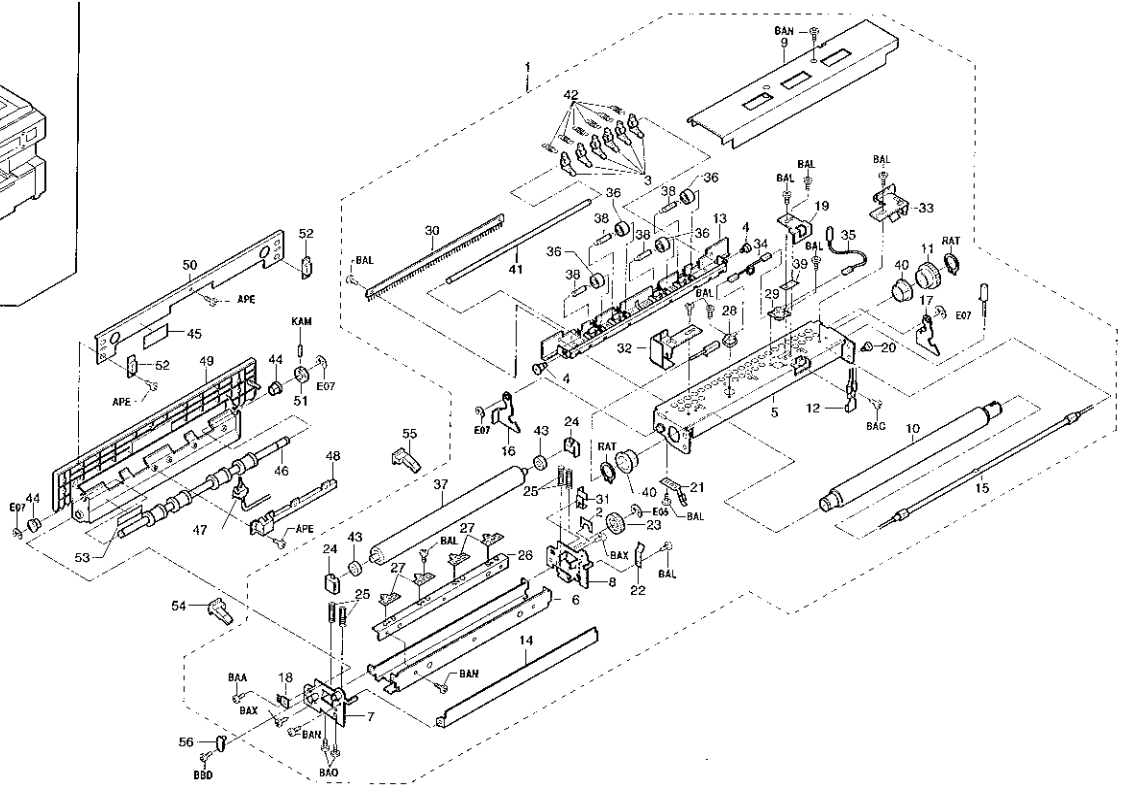

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FIG. 12 FIXING SECTION

Ref. No.	Part. No.	Description	Quantity USA (120V)
1	34993090	PARTS FIXING ASS'Y 120(SP)	1
2	•M2104260	EDGING,EDS-0607U(KITAGAWA)	1
3	•28120470	SEPARATION CLAW T	6
4	•33920500	RETAINING PIN,FIXING GUIDE	2
5	•34920010	HOUSING,FIXING	1
6	•34920020	BASE,FIXING	1
7	•34920030	FRONT FRAME,FIXING	1
8	•34920040	REAR FRAME,FIXING	1
9	•34920050	COVER,FIXING	1
10	•34993200	PARTS ROLLER HEAT(SP)	1
11	•34920070	GEAR 40,HEAT ROLLER	1
12	•34920080	THERMISTER,FIXING	1
13	•34920090	UPPER GUIDE,FIXING	1
14	•34920100	FRONT GUIDE,FIXING	1
15	•34993210	PARTS HEATER 120 FIXING(SP)	1
16	•34920130	FRONT LEVER,FIXING PRESSURE	1
17	•34920140	REAR LEVER,FIXING PRESSURE	1
18	•34920150	STATIC ELIMINATOR,EJECT ROLLER	1
19	•34920160	PARTITION,FIXING THERMISTOR	1
20	•34920170	FULCRUM PIN,FIXING	1
21	•34920180	GROUND PLATE,HEAT ROLLER	1
22	•34920190	GROUND PLATE,FIXING UNIT	1
23	•34920200	GEAR 30,IDLE EJECT	1
24	•34920210	PRESSING PLATE,FIXING	2
25	•34920220	SPRING,PRESSURE	4
26	•34920290	MOUNT,PRESS ROLLER SEPARATION CLAW	1
27	•34920300	SEPARATION CLAW,PRESS ROLLER	4
28	•34920310	THERMOSTAT 140,FIXING	1
29	•34920320	THERMOSTAT 150,FIXING	1
30	•34920330	STATIC ELIMINATOR,EJECT	1
31	•34920340	GUIDE FILM,EJECT WIRE	1
32	•34920350	FRONT MOUNT,HEATER	1
33	•34920360	REAR MOUNT,HEATER	1
34	•34927280	JUNCTION WIRING,THERMOSTAT	1
35	•34927290	JUNCTION WIRING,FIXING HEATER	1
36	•60820010	EJECT PULLEY	4
37	•66068450	PRESS ROLLER PFA	1
38	•72907110	SPRING,PAPER GUIDE PULLEY	4
39	•73920080	BLADE,HEAT ROLLER	1
40	•75720060	BUSHING HEAT ROLLER	2
41	•75720080	SHAFT SEPARATION CLAW	1
42	•75720240	SPRING SEPARATION CLAW	6
43	•77020010	BEARING PRESS ROLLER	2
44	49028112	BUSHING 8,LOWER REG.ROLLER	2
45	34905070	LABEL,FIXING JAM	1
46	34921010	LOWER ROLLER,EJECT	1
47	34921020	SWITCH,EJECT	1
48	34921030	MOUNT,EJECT SWITCH	1
49	34921040	BASE,EJECT	1
50	34921050	REINFORCEMENT,EJECT BASE	1
51	34921060	GEAR 22,EJECT	1
52	62207620	MAGNET,FEED SHIFT	2
53	68305090	CAUTION LABEL,HIGH TEMPERATURE L(EXP)	1
54	34920370	FRONT SPACER,FIXING	1
55	34920380	REAR SPACER,FIXING	1
56	34921080	FULCRUM PIN,EJECT	1

• Parts with "•" are component parts or sub-assemblies of the assembly appearing immediately above them.

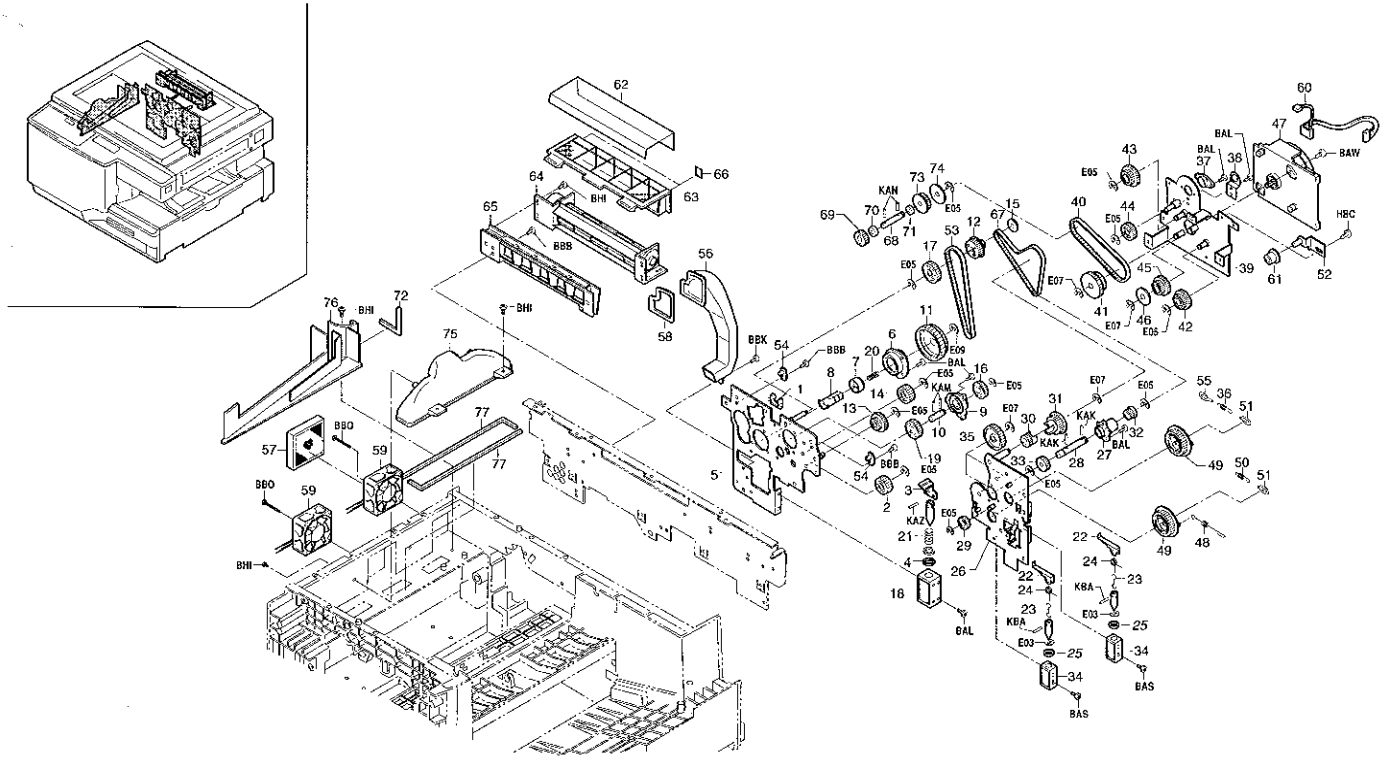
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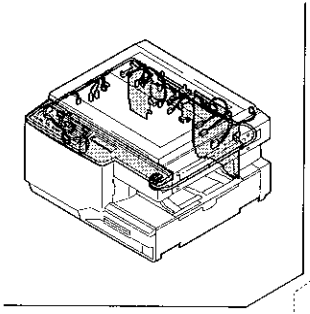
FIG. 13 DRIVING, COOLING SECTION

Ref. No.	Part. No.	Description	Quantity USA (120V)
1	M2104220	EDGING,EDS-1717U	1
2	45727313	IDLE GEAR,FIXING UNIT	1
3	34916250	ARM,REGISTRATION	1
4	34916470	SPONGE,REGISTRATION SOLENOID	1
5	34922010	REINFORCEMENT,DRIVE	1
6	34922030	POSITIONING PLATE,DRUM	1
7	34922040	COUPLING,DRUM	1
8	34922050	SHAFT,COUPLING	1
9	34922090	BUSHING,DEVELOPING DRIVE	1
10	34922100	SHAFT,DEVELOPING DRIVE	1
11	34922330	GEAR 60/50	1
12	34922350	PULLEY 33/14	1
13	34922380	GEAR 30/18	1
14	34922390	GEAR 25,PAPER FEED	1
15	34922530	COLLAR,PULLEY	1
16	34922570	GEAR 23,DEVELOPING	1
17	34922580	GEAR 32,DEVELOPING	1
18	34993250	PARTS SOLENOID REGISTRATION(SP)	1
19	66022131	GEAR 30,DEVELOPING DRIVE	1
20	66222180	SPRING,DRUM DRIVE	1
21	72107210	SPRING,BYPASS SOLENOID	1
22	34916070	ARM A,PAPER FEED	2
23	34916240	ARM B,PAPER FEED	2
24	34916350	SPRING,PAPER FEED SOLENOID	2
25	*34916460*	*SPONGE,PAPER FEED SOLENOID*	*2*
26	34922020	FRAME,PAPER FEED	1
27	34922110	BUSHING,RETARD	1
28	34922120	SHAFT,RETARD	1
29	34922220	GEAR 18,RETARD	1
30	34922230	GEAR 18	1
31	34922370	PULLEY 32	1
32	34922400	PULLEY 14	1
33	34922410	GEAR 20	1
34	34993260	PARTS SOLENOID PAPER FEED(SP)	2
35	77721721	IDLE GEAR 38 EJECT SECTION	2
36	34916500	SPRING,BYPASS	1
37	34922060	REAR BUSHING,DRUM	1
38	34922070	REAR GROUND PLATE,DRUM	1
39	34922080	MOUNT,DRIVE MOTOR	1
40	34922190	BELT,FIXING	1
41	34922290	GEAR 80/34	1
42	34922300	GEAR 60/40	1
43	34922310	GEAR 64/20	1
44	34922320	GEAR 23	1
45	34922340	GEAR 60/24	1
46	34922440	COLLAR,DRIVE	1
47	66227110	MOTOR,MAIN	1
48	34906130	SPRING,BYPASS LIFT	1
49	34906140	GEAR 38,PAPER FEED	2
50	34916170	SPRING,PAPER FEED	1
51	34916480	COLLAR,PAPER FEED GEAR	2
52	34922180	TENSION PLATE,DEVELOPING	1
53	34922200	BELT,DEVELOPING	1
54	34922430	PIN,SCANNER RETAINING	2
55	34922520	COUPLER,PAPER FEED	1
56	34923030	DUCT B,OZONE	1
57	34993230	PARTS FILTER OZONE(SP)	1
58	34923080	SPONGE B,DUCT OZONE	1
59	34993270	PARTS FAN COOLING(SP)	2
60	34927140	WIRE,DRIVE MOTOR	1
61	48928105	IDLE PULLEY 15	1
62	66012350	OPTICAL FILTER	1
63	66023050	HOLDER,FILTER	1
64	66023030	OPTICAL FAN	1
65	66023042	DUCT,OPTICAL FAN	1
66	75710190	SPONGE MAIN CHARGER	2
67	34922210	BELT,PAPER FEED	1
68	34922240	SHAFT,FIXING DRIVE	1
69	34920240	GEAR 22,FIXING INPUT	1
70	34920250	FRONT BEARING,FIXING DRIVE	1
71	34920260	REAR BEARING,FIXING DRIVE	1
72	34923070	SPONGE,DUCT OZONE	1
73	34922280	PULLEY 30	1
74	34922560	COLLAR,FIXING	1
75	34923010	DUCT,COOLING	1
76	34923020	DUCT,OZONE	1
77	34923060	SPONGE,COOLING DUCT	2

• Parts with "•" are component parts or sub-assemblies of the assembly appearing immediately above them.



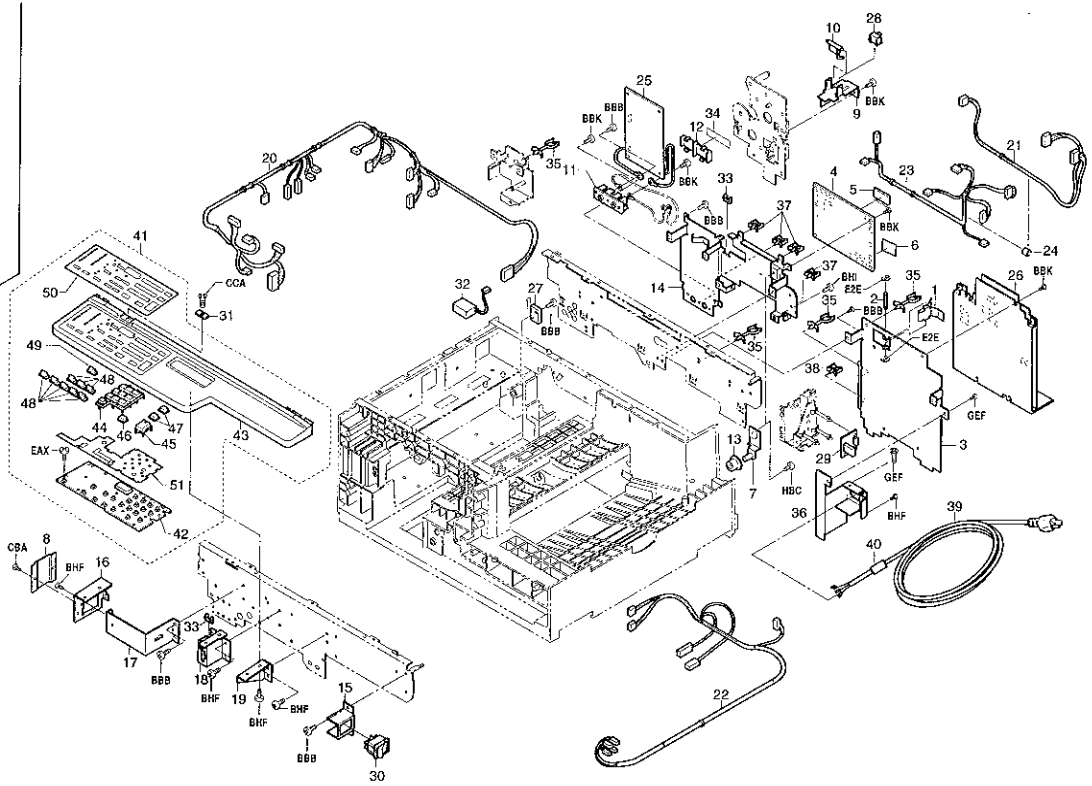

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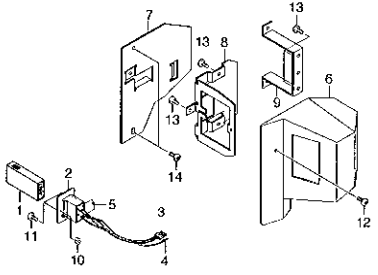
FIG. 14 ELECTRICAL COMPONENTS

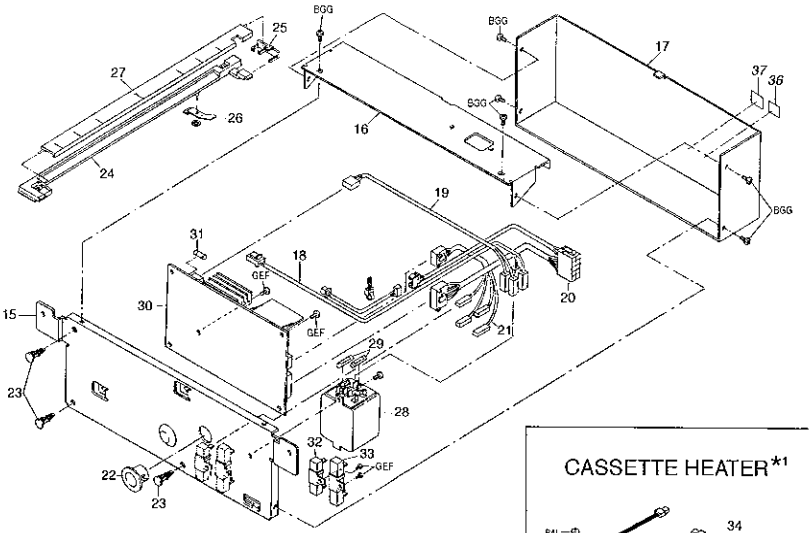
Ref. No.	Part. No.	Description	Quantity USA (120V)
1	34922250	ARM,SAFETY SWITCH	1
2	34922260	SHAFT A,SAFETY SWITCH	1
3	34922490	MOUNT,POWER SOURCE	1
4	34968020	MAIN PCB ASS'Y SP	1
5	*34993241*	*PARTS IC,ROM(SP)*	*1*
6	66227320	IC,NVRAM A	1
7	34922170	TENSION PLATE,PAPER FEED	1
8	34904140	COVER,COUNTER	1
9	34907240	MOUNT,CASSETTE DETECTION	1
10	34907250	LEVER,CASSETTE DETECTION	1
11	34917180	HOUSING,HIGH VOLTAGE JUNCTION	1
12	34917190	LID,HIGH VOLTAGE JUNCTION	1
13	48928105	IDLE PULLEY 15	1
14	34922130	MOUNT,PCB	1
15	34926010	MOUNT,MAIN SWITCH	1
16	34926020	MOUNT A,KEY COUNTER	1
17	34926030	MOUNT B,KEY COUNTER	1
18	34926040	MOUNT A,OPERATION UNIT	1
19	34926050	MOUNT A,OPERATION UNIT	1
20	34927110	WIRE,IMAGE FORMATION JUNCTION	1
21	34927130	WIRE,COMPOSITE CIRCUIT	1
22	34927180	WIRE,MAIN SWITCH	1
23	34927230	WIRE,SOLENOID	1
24	63827080	FERRITE CORE	1
25	34993300	PARTS HIGH VOLTAGE TRANSFORMER PCB(SP)	1
26	34993280	PARTS COMPOSITE CIRCUIT PCB(120)SP	1
27	61727540	INTERLOCK SWITCH B	1
28	66127010	SWITCH,COVER OPEN	1
29	68328170	HUMIDITY SENSOR PCB	1
30	69027070	SWITCH,MAIN	1
31	71804200	MAGNET PLATE,TOP COVER	1
32	79927080	TOTAL COUNTER	1
33	M2104210	EDGING,EDS-2	2
34	69905030	LABEL,HIGH VOLTAGE CAUTION(EXP)	1
35	M2105990	CLAMP,HL-18-0(KITAGAWA)	4
36	34922500	MOUNT,INLET(120)	1
37	M2109000	WIRE SADDLE,WS-1NS	4
38	M2109010	WIRE SADDLE,WS-2NS	1
39	60101201	POWER CORD 120 ASS'Y	1
40	M1203490	STRAIN RELEAF BUSHING,SR-7K-2	1
41	34993110	PARTS OPERATION UNIT ASS'Y(INCH)SP	1
42	•34901060	PCB OPERATION UNIT ASS'Y	1
43	•34925020	COVER,OPERATION UNIT	1
44	•34925030	KEY 10,OPERATION UNIT	1
45	•34925040	KEY,PRINT	1
46	•34925050	KEY,STOP CLEAR	1
47	•34925060	KEY,RESET	2
48	•34925070	KEY,EXPOSURE	8
49	•34925080	KEY 7SEGMENT	1
50	•34925100	SHEET,OPERATION UNIT (INCH)	1
51	•34925110	SHEET,DUST SHIELD	1

• Parts with "•" are component parts or sub-assemblies of the

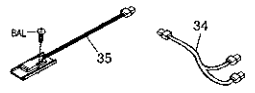
For KEY COUNTER*1



SIZE INDICATOR and POWER SUPPLY for ADF*2



CASSETTE HEATER*1



*1 For the installation, refer to the Service Manual.
*2 For the installation, refer to the manual "How to install ADF".

FIG. 15 OPTION

Ref. No.	Part. No.	Description	Quantity USA (120V)
1	82142540	KEY COUNTER	1
2	41529210	SOCKET ASS'Y,KEY COUNTER	1
3	•J0220040	PLUG EL 4P,ELP-04V	1
4	•J0220900	SOCKET EL,LLF-01T-1.3E	4
5	•43826700	DI Z1033	1
	66069780	SET PARTS KEY COUNTER	1
6	•66060010	COVER,KEY COUNTER	1
7	•66060020	RETAINER,KEY COUNTER COVER	1
8	•66060030	RETAINER,KEY COUNTER	1
9	•66060040	MOUNT,KEY COUNTER	1
10	•C1303000	NUT M3 (BLACK)	1
11	•B2303060	COUNTER-SUNK HEAD SCREW BFHM3X6 (BLACK)	2
12	•B4104060	TRIPLE SCREW M4X6(CHROMIUM)	1
13	•B4304060	TRIPLE SCREW M4X6(BLACK)	4
14	•B4304100	TRIPLE SCREW M4X10(BLACK)	2
15	34960070	BASE,POWER SOURCE BOX	1
16	34960080	UPPER COVER,POWER SOURCE BOX	1
17	34960090	MIDDLE COVER,POWER SOURCE BOX	1
18	34960100	WIRE 1,POWER SOURCE BOX	1
19	34960110	WIRE 2,POWER SOURCE BOX	1
20	34960120	WIRE 3,POWER SOURCE BOX	1
21	34960130	WIRE 4,POWER SOURCE BOX	1
22	M2103080	BUSHING,TB-2533(KITAGAWA)	1
23	M2108700	SPACER,KGLS-8RF(KITAGAWA)	3
24	34960010	MOUNT BASE,ORIGINAL SIZE INDICATOR	1
25	34960020	MOUNT,ORIGINAL SIZE INDICATOR	1
26	34960030	PLATE SPRING,ORIGINAL SIZE INDICATOR	1
27	34960050	ORIGINAL SIZE INDICATOR,ORIGINAL (INCH)	1
28	66227120	NOISE FILTER 100	1
29	M1661000	FUSE 15A,314015	2
30	66028071	POWER SOURCE PCB 100	1
31	71867000	MINIATURE FUSE 125V 8A JET,UL/CSA	1
32	34960140	RESISTOR 15,OHM	1
33	34960150	RESISTOR 240,OHM	1
34	34968010	WIRE,DEHUMIDIFIER	1
35	66027021	DEHUMIDIFIER HEATER	1
36	*28173600*	*CAUTION LABEL B*	*1*
37	*66205080*	*LABEL,FUSE*	*1*

• Parts with "•" are component parts or sub-assemblies of the

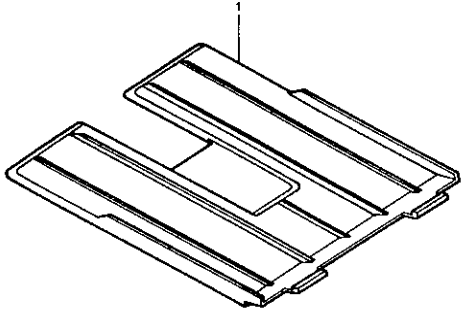

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FIG. 16 ACCESSORY

Ref. No.	Part. No.	Description	Quantity USA (120V)

• Parts with "•" are component parts or sub-assemblies of the

Part. No.	Description	Quantity USA (120V)	Fig. No.
28120470	SEPARATION CLAW T	6	12
28173600	*CAUTION LABEL B*	*5*	*1, 15*
28206151	SPRING,CASSETTE B	2	3
29705100	*CAUTION LABEL,DRUM*	*1*	*11*
29806810	*BUSHING,6 REGISTRATION*	*5*	*2, 4, 5, 10*
33418270	*PULLEY,SEPARATION CLAW*	*2*	*10*
33906990	SWITCH,BYPASS SIZE DETECTION	1	4
33907100	RACK,CASSETTE	2	4
33907110	TERMINAL,PAPER SIZE PCB	1	4
33914190	TONER SENSOR	1	9
33920500	RETAINING PIN,FIXING GUIDE	2	12
33928110	SIZE DETECTION PCB	1	4
34806150	*STOPPER 5*	*2*	*5*
34817160	PIN,CHARGER	3	6, 6
34900080	UPPER FRONT TRANSFER GUIDE ASS'Y	1	6
34900090	ORIGINAL HOLDER ASS'Y	1	7
34900120	CASSETTE ASS'Y	1	3
34900180	MAIN CHARGER CONNECTOR ASS'Y	1	6
34900190	TRANSFER CHARGER CONNECTOR ASS'Y	1	6
34901060	PCB OPERATION UNIT ASS'Y	1	14
34902020	FRONT REINFORCEMENT,BASE	1	2
34902030	REAR REINFORCEMENT,BASE	1	2
34902050	BOLT,LEVEL	2	2
34904010	FRONT COVER	1	1
34904020	RIGHT FRONT COVER	1	1
34904030	UPPER RIGHT COVER	1	1
34904040	LEFT COVER	1	1
34904050	LOWER RIGHT COVER	1	1
34904060	HOLDER,CONTACT GLASS	1	7
34904070	UPPER REAR COVER	1	1
34904080	REAR COVER	1	1
34904090	COVER,CASSETTE	1	3
34904100	COVER,ORIGINAL	1	7
34904110	COVER,PLATEN	1	7
34904120	INNER COVER,CASSETTE	1	2
34904130	HINGE,RELEASE	2	1
34904140	COVER,COUNTER	1	14
34904150	STOPPER,MAGNET	1	1
34904160	INNER FRONT COVER	1	1
34904170	STOPPER,CASSETTE	1	3

Part. No.	Description	Quantity USA (120V)	Fig. No.
34904180	COVER,ADF	1	1
34904190	MAGNET,RELEASE	1	1
34905060	LABEL,SIM	1	1
34905070	LABEL,FIXING JAM	1	12
34905080	LABEL,CONVEYING JAM	1	1
34905090	LABEL,PAPER SET	1	2
34906010	UPPER PULLEY,BYPASS	1	4
34906020	PULLEY,LIMITER	1	2
34906030	TORQUE LIMITER,BYPASS	1	2
34906040	LOWER GUIDE,BYPASS	1	4
34906050	WORK PLATE,BYPASS LIFT	1	4
34906060	MOUNT,LIMITER	1	2
34906070	SHAFT,BYPASS PAPER FEED	1	4
34906080	SHAFT,LIMITER	1	2
34906090	LEVER,LIMITER	1	2
34906100	COLLAR,POSITIONING	1	2
34906110	SPRING,LIMITER SUPPORT	1	2
34906120	LEVER,BYPASS LIFT	1	4
34906130	SPRING,BYPASS LIFT	1	13
34906140	GEAR 38,PAPER FEED	2	13
34906150	INNER BUSHING,PAPER FEED	5	4
34906160	OUTER BUSHING,PAPER FEED	5	4
34906170	FILM,BYPASS GUIDE	4	4
34906180	SPRING,LIFT AUXILIARY	1	4
34906190	FILM,PAPER GUIDE	1	4
34906200	TABLE,BYPASS	1	4
34906210	TABLE,BYPASS SLIDE	1	4
34906220	COVER,SIZE DETECTION	1	4
34906230	FRONT CURSOR,BYPASS	1	4
34906240	REAR CURSOR,BYPASS	1	4
34906250	SUPPORT PLATE,BYPASS WIRE	1	4
34906260	SPRING,WIRE SUPPORT	1	4
34906270	ADJUSTING PLATE,BYPASS	1	4
34906290	STOPPER,PAPER SET	1	4
34906300	SLIDER,BYPASS PAPER FEED	1	4
34907010	CASSETTE,PAPER FEED	1	3
34907020	FRONT CURSOR,CASSETTE	1	3
34907030	REAR CURSOR,CASSETTE	1	3
34907040	FRONT CLAW,CASSETTE	1	3
34907050	REAR CLAW,CASSETTE	1	3

Part. No.	Description	Quantity USA (120V)	Fig. No.
34907060	LEVER,CURSOR RETAINING	1	3
34907070	PIN,CLAW CASSETTE	3	3
34907080	BASE,CASSETTE	1	3
34907100	LEVER,CASSETTE PRESSURE RELEASE	1	3
34907110	PIN,PRESSURE RELEASE	1	3
34907120	SPRING,PRESSURE RELEASE	1	3
34907130	REAR STOPPER,PAPER	1	3
34907140	GEAR 18,CASSETTE	1	3
34907150	PULLEY,CASSETTE	4	2, 3
34907170	INNER REINFORCEMENT,BASE	1	2
34907180	WORK PLATE,PRESSURE RELEASE	1	2
34907190	RIGHT MOUNT,CASSETTE PULLEY	1	2
34907200	PULLEY A,PAPER FEED	2	4
34907210	PULLEY B,PAPER FEED	4	4
34907220	SHAFT A,CASSETTE PAPER FEED	1	4
34907230	SHAFT B,CASSETTE PAPER FEED	1	4
34907240	MOUNT,CASSETTE DETECTION	1	14
34907250	LEVER,CASSETTE DETECTION	1	14
34907260	HOLDER,CURSOR	1	3
34907270	PLATE SPRING,CURSOR	1	3
34907280	SUPPORT PLATE,PULLEY	2	4
34907290	PULLEY,GUIDE	2	4
34907300	PIN CASSETTE	4	2, 3
34907310	GUIDE,CASSETTE	1	2
34907320	GUIDE,PAPER	1	4
34907330	LABEL,PAPER UPPER LIMIT	1	3
34907340	REAR STOPPER B,PAPER	1	3
34907350	PAD A,CASSETTE	2	3
34907370	GUIDE B,CASSETTE	1	2
34908050	SHAFT,DRUM	1	9
34909050	*FRONT GROUND PLATE,DRUM DRIVE*	*1*	*10*
34909060	RETAINER,LEVER	1	2
34909070	LEVER,LOCK	1	2
34909080	RAIL,IMAGE FORMATION	2	2
34909090	GROUND PLATE,IMAGE FORMATION LOCK	1	2
34910010	FRONT HOUSING,MAIN CHARGER	1	6
34910020	REAR HOUSING,MAIN CHARGER	1	6
34910030	SHIELD,MAIN CHARGER	1	6
34910050	TENSION PLATE,GRID	1	6
34910060	HOOK,MC WIRE	1	6

Part. No.	Description	Quantity USA (120V)	Fig. No.
34910070	HOUSING,MC TERMINAL BASE	1	6
34910080	SEAL,CLEANING LAMP	1	6
34910090	MOUNT,CLEANING LAMP	1	6
34910100	MOUNT,BLANK LAMP	1	6
34910110	FRONT LID,MC	1	6
34910120	REAR LID,MC	1	6
34910130	SPRING,MC TERMINAL BASE	1	6
34910140	PLATE SPRING,MC TERMINAL BASE	1	6
34910150	HOLDER,CHARGE CLEANING	2	6
34910160	SHAFT,CHARGE CLEANING	1	6
34910170	SLIDER,CHARGE CLEANING	1	6
34910180	KNOB,CHARGE CLEANING	1	6
34910190	SPRING,CHARGE CLEANING	1	6
34912030	CONTACT GLASS	1	7
34912040	MOUNT BASE,ORIGINAL HOLDER	2	7
34912050	SPACER,MOUNT BASE ORIGINAL	2	7
34912110	ORIGINAL SIZE INDICATOR,ORIGINAL (INCH)	1	7
34914030	LEFT SPIRAL,DEVELOPING	1	9
34914040	RIGHT SPIRAL,DEVELOPING	1	9
34914090	RAIL,LID DEVELOPING	4	9
34914100	SHAFT,IMAGE FORMATION HANDLE	1	9
34914110	SPRING,IMAGE FORMATION HANDLE	1	9
34914120	MOUNT BASE,HANDLE	2	9
34914130	STOPPER,DEVELOPING	1	9
34914140	UPPER LID,DEVELOPING	1	9
34914160	FILM,DEVELOPING	1	9
34914170	UPPER SEAL,LID	1	9
34914180	FRONT LID,DEVELOPING	1	9
34914200	GEAR 19,IDLE DEVELOPING	1	9
34914210	GEAR 17,MAGNET ROLLER	1	9
34914240	SEAL,DEVELOPING	2	9
34914250	SEAL,COVER DOCTOR BLADE	2	9
34914270	UPPER SEAL,DEVELOPING	1	9
34914310	FRONT SEAL,LID	1	9
34914330	LEFT SEAL,LID	2	9
34914350	LOWER SEAL,DEVELOPING	1	9
34914360	FRONT BUSHING,SPIRAL	2	9
34914380	STOPPER,IMAGE FORMATION	1	9
34914390	LEFT FILM,DEVELOPING SPIRAL	1	9
34914400	GEAR 28,DEVELOPING	1	9

Part. No.	Description	Quantity USA (120V)	Fig. No.
34914410	GEAR 31,DEVELOPING	1	9
34914420	LOWER SEAL,DEVELOPING HOUSING	2	9
34914430	REAR FILM,DEVELOPING	1	9
34915010	*HOUSING,HOPPER*	*1*	*11*
34915020	*SPIRAL,HOPPER*	*1*	*11*
34915030	*PADDLE A,HOPPER*	*1*	*11*
34915040	*PADDLE B,HOPPER*	*1*	*11*
34915050	*WEIGHT B,PADDLE*	*1*	*11*
34915060	*SHAFT B,PADDLE*	*1*	*11*
34915070	*GEAR 15,SPIRAL*	*1*	*11*
34915080	*GEAR 22,PADDLE*	*1*	*11*
34915090	*CAM,HOPPER*	*1*	*11*
34915110	*LEFT LID,HOPPER*	*1*	*11*
34915120	*FILM,SPIRAL*	*1*	*11*
34915130	*FILM A,PADDLE*	*2*	*11*
34915140	*RIGHT SEAL,HOPPER*	*1*	*11*
34915150	*RIGHT LID M,HOPPER (N.A.)*	*1*	*11*
34915160	*RIGHT COVER,LID HOPPER*	*1*	*11*
34915180	*LOWER COVER,HOPPER*	*1*	*11*
34915190	*GEAR 20,HOPPER*	*2*	*11*
34915200	*SHAFT,VIBRATION*	*1*	*11*
34915210	*LEFT COVER,HOPPER*	*1*	*11*
34915220	*INNER LID,HOPPER*	*1*	*11*
34915230	*LOWER SEAL,HOPPER*	*1*	*11*
34915240	*LEFT SEAL,HOPPER*	*1*	*11*
34915250	*INNER SEAL,LID HOPPER*	*2*	*11*
34915260	*LEFT SEAL,LID HOPPER*	*1*	*11*
34915270	*FILM B,PADDLE*	*1*	*11*
34915280	*GROUND PLATE H,TONER MOTOR*	*1*	*11*
34915290	*PROTECTING PLATE,HOPPER*	*1*	*11*
34915300	*SPRING,HOPPER CAM*	*1*	*11*
34916010	GUIDE,REGISTRATION	1	5
34916020	SHUTTER,REGISTRATION	1	5
34916030	REAR FRAME,REGISTRATION	1	5
34916040	FRONT FRAME,REGISTRATION	1	5
34916050	REAR PLATE SPRING,REGISTRATION UNIT	1	5
34916060	FRONT PLATE SPRING,REGISTRATION UNIT	1	5
34916070	ARM A,PAPER FEED	2	13
34916080	SUPPORT PLATE,REGISTRATION SWITCH	1	5
34916090	LOWER ROLLER,REGISTRATION	1	5

Part. No.	Description	Quantity USA (120V)	Fig. No.
34916100	UPPER PULLEY,REGISTRATION	2	5
34916110	LOWER FRONT ROLLER,TRANSFER	1	5
34916140	REAR ARM,REGISTRATION ROLLER	2	5
34916150	SHAFT,REGISTRATION FULCRUM	1	5
34916160	SHAFT,JAM FULCRUM	1	5
34916170	SPRING,PAPER FEED	1	13
34916180	LEVER,JAM FULCRUM	1	5
34916190	HOLDER,REGISTRATION	2	5
34916200	PULLEY,HOLDER	2	5
34916210	SHAFT,HOLDER	2	5
34916230	SHAFT,ROLLER	1	5
34916240	ARM B,PAPER FEED	2	13
34916250	ARM,REGISTRATION	1	13
34916270	PULLEY 15	1	5
34916280	GEAR 15/30	1	5
34916290	GEAR 25	1	5
34916300	REAR PULLEY 15	1	5
34916310	PULLEY 20	1	5
34916320	BUSHING 5	1	5
34916330	BELT,REGISTRATION	1	5
34916340	BELT,FEED	1	5
34916350	SPRING,PAPER FEED SOLENOID	2	13
34916360	GUIDE,CONVEYING	1	5
34916370	PIN,REGISTRATION	1	5
34916380	COLLAR,REGISTRATION	1	5
34916390	PLATE SPRING,REGISTRATION PULLEY	1	5
34916420	LOWER ARM,TRANSFER	2	5
34916460	*SPONGE,PAPER FEED SOLENOID*	*2*	*13*
34916470	SPONGE,REGISTRATION SOLENOID	1	13
34916480	COLLAR,PAPER FEED GEAR	2	13
34916490	SEAL,REGISTRATION GUIDE	2	5
34916500	SPRING,BYPASS	1	13
34916510	*SPRING,LEVER*	*1*	*5*
34917010	FRONT HOUSING,TRANSFER	1	6
34917020	REAR HOUSING,TRANSFER	1	6
34917030	SHIELD,TRANSFER	1	6
34917040	FRONT LID,TC	1	6
34917050	REAR LID,TC	1	6
34917060	HOOK,WIRE	2	6
34917070	PARTITION,TRANSFER SHIELD	1	6

Part. No.	Description	Quantity USA (120V)	Fig. No.
34917080	GUIDE FILM,TRANSFER	1	6
34917090	HOUSING,TC TERMINAL BASE	1	6
34917100	PLATE SPRING,CONNECTOR TRANSFER	1	6
34917110	PLATE SPRING,CONNECTOR SEPARATION	1	6
34917120	LID,TRANSFER CONNECTOR HOUSING	1	6
34917130	SPRING,TRANSFER LIFT	2	5
34917140	STOPPER,TRANSFER CHARGER	1	6
34917150	PLATE SPRING,TRANSFER STOPPER	1	6
34917160	HOLDER,TRANSFER CHARGER	2	5
34917170	PULLEY,TRANSFER HOLDER	2	5
34917180	HOUSING,HIGH VOLTAGE JUNCTION	1	14
34917190	LID,HIGH VOLTAGE JUNCTION	1	14
34917200	GUIDE,SEPARATION	1	6
34917210	SPACER,TRANSFER CHARGER	2	6
34917220	LOWER FRONT SEAL,TRANSFER	1	6
34917240	LOWER SPONGE,TRANSFER	1	4
34917250	LOWER FRONT GUIDE,TRANSFER	1	6
34918050	*SHAFT,THRUST*	*1*	*10*
34918080	GEAR 31,THRUST	1	9
34918090	*GEAR 19,DISPOSAL*	*1*	*10*
34918120	*SPONGE,CLEANING*	*2*	*10*
34918130	*INNER SPONGE,CLEANING*	*1*	*10*
34918170	*SPACER,DRUM*	*1*	*10*
34918180	*LEVER,PRESSURE RELEASE*	*1*	*10*
34918200	*SPRING,THRUST*	*1*	*10*
34918240	*MOUNT,SEPARATION SEPARATION CLAW*	*1*	*10*
34918250	*SLIDE PLATE,SEPARATION CLAW*	*1*	*10*
34918260	*LEVER,SEPARATION SEPARATION CLAW*	*1*	*10*
34918270	*SHAFT,SEPARATION CLAW*	*1*	*10*
34918310	*MOUNT 23,BLADE*	*1*	*10*
34918340	*UPPER SPONGE,CLEANING*	*1*	*10*
34918350	*HOLDER,SEPARATION PULLEY*	*2*	*10*
34918360	*MOUNT,SEPARATION PULLEY*	*2*	*10*
34920010	HOUSING,FIXING	1	12
34920020	BASE,FIXING	1	12
34920030	FRONT FRAME,FIXING	1	12
34920040	REAR FRAME,FIXING	1	12
34920050	COVER,FIXING	1	12
34920070	GEAR 40,HEAT ROLLER	1	12
34920080	THERMISTER,FIXING	1	12

Part. No.	Description	Quantity USA (120V)	Fig. No.
34920090	UPPER GUIDE,FIXING	1	12
34920100	FRONT GUIDE,FIXING	1	12
34920130	FRONT LEVER,FIXING PRESSURE	1	12
34920140	REAR LEVER,FIXING PRESSURE	1	12
34920150	STATIC ELIMINATOR,EJECT ROLLER	1	12
34920160	PARTITION,FIXING THERMISTOR	1	12
34920170	FULCRUM PIN,FIXING	1	12
34920180	GROUND PLATE,HEAT ROLLER	1	12
34920190	GROUND PLATE,FIXING UNIT	1	12
34920200	GEAR 30,IDLE EJECT	1	12
34920210	PRESSING PLATE,FIXING	2	12
34920220	SPRING,PRESSURE	6	5, 12
34920230	POSITIONING PLATE,FIXING	4	2
34920240	GEAR 22,FIXING INPUT	1	13
34920250	FRONT BEARING,FIXING DRIVE	1	13
34920260	REAR BEARING,FIXING DRIVE	1	13
34920270	LOWER GROUND PLATE,FIXING	1	2
34920290	MOUNT,PRESS ROLLER SEPARATION CLAW	1	12
34920300	SEPARATION CLAW,PRESS ROLLER	4	12
34920310	THERMOSTAT 140,FIXING	1	12
34920320	THERMOSTAT 150,FIXING	1	12
34920330	STATIC ELIMINATOR,EJECT	1	12
34920340	GUIDE FILM,EJECT WIRE	1	12
34920350	FRONT MOUNT,HEATER	1	12
34920360	REAR MOUNT,HEATER	1	12
34920370	FRONT SPACER,FIXING	1	12
34920380	REAR SPACER,FIXING	1	12
34921010	LOWER ROLLER,EJECT	1	12
34921020	SWITCH,EJECT	1	12
34921030	MOUNT,EJECT SWITCH	1	12
34921040	BASE,EJECT	1	12
34921050	REINFORCEMENT,EJECT BASE	1	12
34921060	GEAR 22,EJECT	1	12
34921070	BASE,EJECT TRAY	1	2
34921080	FULCRUM PIN,EJECT	1	12
34922010	REINFORCEMENT,DRIVE	1	13
34922020	FRAME,PAPER FEED	1	13
34922030	POSITIONING PLATE,DRUM	1	13
34922040	COUPLING,DRUM	1	13
34922050	SHAFT,COUPLING	1	13

Part. No.	Description	Quantity USA (120V)	Fig. No.
34922060	REAR BUSHING,DRUM	1	13
34922070	REAR GROUND PLATE,DRUM	1	13
34922080	MOUNT,DRIVE MOTOR	1	13
34922090	BUSHING,DEVELOPING DRIVE	1	13
34922100	SHAFT,DEVELOPING DRIVE	1	13
34922110	BUSHING,RETARD	1	13
34922120	SHAFT,RETARD	1	13
34922130	MOUNT,PCB	1	14
34922170	TENSION PLATE,PAPER FEED	1	14
34922180	TENSION PLATE,DEVELOPING	1	13
34922190	BELT,FIXING	1	13
34922200	BELT,DEVELOPING	1	13
34922210	BELT,PAPER FEED	1	13
34922220	GEAR 18,RETARD	1	13
34922230	GEAR 18	1	13
34922240	SHAFT,FIXING DRIVE	1	13
34922250	ARM,SAFETY SWITCH	1	14
34922260	SHAFT A,SAFETY SWITCH	1	14
34922270	SHAFT B,SAFETY SWITCH	1	2
34922280	PULLEY 30	1	13
34922290	GEAR 80/34	1	13
34922300	GEAR 60/40	1	13
34922310	GEAR 64/20	1	13
34922320	GEAR 23	1	13
34922330	GEAR 60/50	1	13
34922340	GEAR 60/24	1	13
34922350	PULLEY 33/14	1	13
34922370	PULLEY 32	1	13
34922380	GEAR 30/18	1	13
34922390	GEAR 25,PAPER FEED	1	13
34922400	PULLEY 14	1	13
34922410	GEAR 20	1	13
34922420	GEAR 15	1	2
34922430	PIN,SCANNER RETAINING	2	13
34922440	COLLAR,DRIVE	1	13
34922460	PULLEY 16	1	5
34922480	BEARING,REGISTRATION FULCRUM	2	5
34922490	MOUNT,POWER SOURCE	1	14
34922500	MOUNT,INLET(120)	1	14
34922520	COUPLER,PAPER FEED	1	13

Part. No.	Description	Quantity USA (120V)	Fig. No.
34922530	COLLAR,PULLEY	1	13
34922560	COLLAR,FIXING	1	13
34922570	GEAR 23,DEVELOPING	1	13
34922580	GEAR 32,DEVELOPING	1	13
34923010	DUCT,COOLING	1	13
34923020	DUCT,OZONE	1	13
34923030	DUCT B,OZONE	1	13
34923040	DUCT C,OZONE	1	5
34923060	SPONGE,COOLING DUCT	2	13
34923070	SPONGE,DUCT OZONE	1	13
34923080	SPONGE B,DUCT OZONE	1	13
34925020	COVER,OPERATION UNIT	1	14
34925030	KEY 10,OPERATION UNIT	1	14
34925040	KEY,PRINT	1	14
34925050	KEY,STOP CLEAR	1	14
34925060	KEY,RESET	2	14
34925070	KEY,EXPOSURE	8	14
34925080	KEY 7SEGMENT	1	14
34925100	SHEET,OPERATION UNIT (INCH)	1	14
34925110	SHEET,DUST SHIELD	1	14
34926010	MOUNT,MAIN SWITCH	1	14
34926020	MOUNT A,KEY COUNTER	1	14
34926030	MOUNT B,KEY COUNTER	1	14
34926040	MOUNT A,OPERATION UNIT	1	14
34926050	MOUNT A,OPERATION UNIT	1	14
34926060	SEAL,LIGHT SHIELD BLANK LAMP	1	6
34926070	SHEET,WIRE PROTECTION	2	2
34927020	LAMP,BLANK	1	6
34927031	LAMP,CLEANING	1	6
34927050	*SENSOR,REMAINING DETECTION*	*1*	*11*
34927110	WIRE,IMAGE FORMATION JUNCTION	1	14
34927120	WIRE,REGISTRATION	1	5
34927130	WIRE,COMPOSITE CIRCUIT	1	14
34927140	WIRE,DRIVE MOTOR	1	13
34927150	*WIRE,IMAGE FORMATION UNIT*	*1*	*11*
34927160	WIRE,BYPASS	1	4
34927180	WIRE,MAIN SWITCH	1	14
34927210	WIRE,BLANK	1	6
34927220	WIRE,CLEANING LAMP	1	6

Part. No.	Description	Quantity USA (120V)	Fig. No.
34927230	WIRE,SOLENOID	1	14
34927240	GROUND WIRE,REGISTRATION	1	5
34927250	GROUND WIRE,BYPASS LIFT	1	4
34927280	JUNCTION WIRING,THERMOSTAT	1	12
34927290	JUNCTION WIRING,FIXING HEATER	1	12
34927310	WIRE,MAIN HIGH VOLTAGE	1	6
34927320	WIRE,TRANSFER HIGH VOLTAGE	1	6
34927330	WIRE,SEPARATION HIGH VOLTAGE	1	6
34928070	AE SENSOR PCB	1	8
34929300	FRONT FRAME,SCANNER	1	8
34929310	REAR FRAME,SCANNER	1	8
34929320	UPPER LEFT REINFORCEMENT,SCANNER	1	8
34960010	MOUNT BASE,ORIGINAL SIZE INDICATOR	1	15
34960020	MOUNT,ORIGINAL SIZE INDICATOR	1	15
34960030	PLATE SPRING,ORIGINAL SIZE INDICATOR	1	15
34960050	ORIGINAL SIZE INDICATOR,ORIGINAL (INCH)	1	15
34960070	BASE,POWER SOURCE BOX	1	15
34960080	UPPER COVER,POWER SOURCE BOX	1	15
34960090	MIDDLE COVER,POWER SOURCE BOX	1	15
34960100	WIRE 1,POWER SOURCE BOX	1	15
34960110	WIRE 2,POWER SOURCE BOX	1	15
34960120	WIRE 3,POWER SOURCE BOX	1	15
34960130	WIRE 4,POWER SOURCE BOX	1	15
34960140	RESISTOR 15,OHM	1	15
34960150	RESISTOR 240,OHM	1	15
34960260	GROUND PLATE,CONTACT GLASS	1	7
34968010	WIRE,DEHUMIDIFIER	1	15
34968020	MAIN PCB ASS'Y SP	1	14
34968030	*SENSOR,POSITION DETECTION*	*2*	*8*
34968040	*GLASS,COVER*	*1*	*8*
34968050	*MOTOR,SCANNER DRIVE*	*1*	*8*
34968060	*MOTOR,LENS DRIVE*	*1*	*8*
34968070	*DRUM,SCANNER WIRE*	*2*	*8*
34968080	*FRONT PULLEY,SCANNER WIRE*	*1*	*8*
34968090	*REAR PULLEY,SCANNER WIRE*	*1*	*8*
34968100	*FRONT PULLEY 2/3,MIRROR FRAME*	*1*	*8*
34968110	*REAR PULLEY 2/3,MIRROR FRAME*	*1*	*8*
34968120	*WIRE,SCANNER*	*2*	*8*
34968140	*BELT,SCANNER MOTOR*	*1*	*8*
34968150	*BELT,SCCANNER DRIVE*	*1*	*8*

Part. No.	Description	Quantity USA (120V)	Fig. No.
34968160	*BELT,LENS DRIVE*	*1*	*8*
34968170	*PULLEY,TENSION*	*1*	*8*
34968180	*LAMP 100*	*1*	*8*
34968200	*MIRROR 1*	*1*	*8*
34968210	*MIRROR 2*	*1*	*8*
34968220	*MIRROR 3*	*1*	*8*
34968230	*MIRROR 4*	*1*	*8*
34968240	*MIRROR 5*	*1*	*8*
34968250	*MIRROR 6*	*1*	*8*
34968260	*FRONT MAIN CHARGER HOUSING ASS'Y*	*1*	*6*
34968280	*FRONT TRANSFER CHARGER HOUSING ASS'Y*	*1*	*6*
34968300	*IMAGE FORMATION ASS'Y SP*	*2*	*9, 10*
34993010	PARTS MAIN CHARGER ASS'Y(SP)	1	6
34993020	*PARTS HOPPER ASS'Y(N.A)SP*	*1*	*11*
34993060	PARTS SCANNER UNIT ASS'Y 100(SP)	1	8
34993080	PARTS TRANSFER CHARGER ASS'Y(SP)	1	6
34993090	PARTS FIXING ASS'Y 120(SP)	1	12
34993110	PARTS OPERATION UNIT ASS'Y(INCH)SP	1	14
34993130	PARTS GRID(SP)	1	6
34993170	PARTS COVER DOCTOR BLADE(SP)	1	9
34993200	PARTS ROLLER HEAT(SP)	1	12
34993210	PARTS HEATER 120 FIXING(SP)	1	12
34993230	PARTS FILTER OZONE(SP)	1	13
34993241	*PARTS IC,ROM(SP)*	*1*	*14*
34993250	PARTS SOLENOID REGISTRATION(SP)	1	13
34993260	PARTS SOLENOID PAPER FEED(SP)	2	13
34993270	PARTS FAN COOLING(SP)	2	13
34993280	PARTS COMPOSITE CIRCUIT PCB(120)SP	1	14
34993300	PARTS HIGH VOLTAGE TRANSFORMER PCB(SP)	1	14
34993370	*PARTS BLADE 23 CLEANING(SP)*	*1*	*10*
34993900	*SET REAR TRANSFER CHATGER HOUSING*	*1*	*6*
34993910	*SET REAR CHARGER HOUSING*	*1*	*6*
41529210	SOCKET ASS'Y,KEY COUNTER	1	15
41626652	TUNGSTEN WIRE	1 spl	6
42929503	TUNGSTEN WIRE(50M)	1 spl	6
43826700	DI Z1033	1	15
45592554	*BEARING 688ADD*	*1*	*9*
45727313	IDLE GEAR,FIXING UNIT	1	13
48527200	SPRING,CHARGER	3	6, 6
48928105	IDLE PULLEY 15	2	13, 14
49028112	BUSHING 8,LOWER REG.ROLLER	4	5, 12

Part. No.	Description	Quantity USA (120V)	Fig. No.
49028116	*BUSHING 6,CLEANING UNIT*	*2*	*11*
49927306	*MS MAGNET (S)*	*1*	*11*
60101201	POWER CORD 120 ASS'Y	1	14
60820010	EJECT PULLEY	4	12
61712870	TAPE,CONTACT GLASS	1	7
61727540	INTERLOCK SWITCH B	1	14
62207620	MAGNET,FEED SHIFT	2	12
62218011	*SEPARATION CLAW*	*2*	*10*
62218020	*RATCHET,SEPARATION*	*2*	*10*
63818250	*REAR BUSHING,TONER DISPOSAL ROLLER*	*2*	*11*
63827080	FERRITE CORE	1	14
65009050	SPRING,DEVELOPING ROCK	1	2
65802080	RUBBER,BOLT	2	2
65902670	CUSHION RUBBER	2	2
65914120	GEAR 18,IDLE DEVELOPING	1	4
66012350	OPTICAL FILTER	1	13
66012390	FRONT SIZE INDICATION PLATE(INCH)	1	7
66015200	*TONER MOTOR*	*1*	*11*
66020110	COPY TRAY,EXP.	1	16
66022131	GEAR 30,DEVELOPING DRIVE	1	13
66023030	OPTICAL FAN	1	13
66023042	DUCT,OPTICAL FAN	1	13
66023050	HOLDER,FILTER	1	13
66027021	DEHUMIDIFIER HEATER	1	15
66028071	POWER SOURCE PCB 100	1	15
66060010	COVER,KEY COUNTER	1	15
66060020	RETAINER,KEY COUNTER COVER	1	15
66060030	RETAINER,KEY COUNTER	1	15
66060040	MOUNT,KEY COUNTER	1	15
66068450	PRESS ROLLER PFA	1	12
66069780	SET PARTS KEY COUNTER	1	15
66127010	SWITCH,COVER OPEN	1	14
66205080	*LABEL,FUSE*	*1*	*15*
66222180	SPRING,DRUM DRIVE	1	13
66227110	MOTOR,MAIN	1	13
66227120	NOISE FILTER 100	1	15
66227260	WIRE,GRID	1	6
66227320	IC,NVRAM A	1	14
67305310	CAUTION LABEL,HV	1	6
67312250	PIN,ORIGINAL INDICATION PLATE	1	7

Part. No.	Description	Quantity USA (120V)	Fig. No.
68305090	CAUTION LABEL,HIGH TEMPERATURE L(EXP)	2	2, 12
68305110	CAUTION LABEL,CONTACT GLASS	1	8
68328170	HUMIDITY SENSOR PCB	1	14
68802070	SPRING A,LIFT UP	1	3
69027070	SWITCH,MAIN	1	14
69312020	THERMAL PROTECTOR,SCANNER	1	8
69905030	LABEL,HIGH VOLTAGE CAUTION(EXP)	1	14
71804200	MAGNET PLATE,TOP COVER	1	14
71804400	MAGNET CATCHER	1	2
71806550	SIZE INDICATOR,BYPASS(USA)	1	4
71815161	FRONT SEAL,SUB UNIT BLADE	1	4
71821491	SWITCH,FEED SHIFT	1	5
71867000	MINIATURE FUSE 125V 8A JET,UL/CSA	1	15
72107210	SPRING,BYPASS SOLENOID	2	5, 13
72114320	*PIN,DEV.UNIT HANDLE*	*4*	*9, 10*
72114331	*HANDLE,BELT DEV.UNIT*	*2*	*9, 10*
72114870	*V-RING 6 DIA*	*2*	*11*
72418410	*GEAR 18, SPIRAL*	*2*	*11*
72907110	SPRING,PAPER GUIDE PULLEY	4	12
72907620	FRICTION CLOTH,CASSETTE	1	4
73210450	BUSH, 6	5	5
73905191	LABEL,SUPPLY(E,F,S)	1	1
73920080	BLADE,HEAT ROLLER	1	12
75122090	GEAR , FRONT	1	9
75704290	HINGE ORIGINAL HOLDER	2	7
75704450	MAT ORIGINAL HOLDER(USA)	1	7
75710190	SPONGE MAIN CHARGER	2	13
75720060	BUSHING HEAT ROLLER	2	12
75720080	SHAFT SEPARATION CLAW	1	12
75720240	SPRING SEPARATION CLAW	6	12
76727010	*ORIGINAL SIZE SWITCH*	*3*	*4, 11*
77020010	BEARING PRESS ROLLER	2	12
77616110	PAD TC CLEANING	2	6
77721721	IDLE GEAR 38 EJECT SECTION	2	13
79904140	ORIGINAL HOLDER SPACER	2	7
79927080	TOTAL COUNTER	1	14
B2303060	COUNTER-SUNK HEAD SCREW BFHM3X6 (BLACK)	2	15
B4104060	TRIPLE SCREW M4X6(CHROMIUM)	1	15
B4304060	TRIPLE SCREW M4X6 (BLACK)	4	15
B4304100	TRIPLE SCREW M4X10 (BLACK)	2	15

Part. No.	Description	Quantity USA (120V)	Fig. No.
C1303000	NUT M3 (BLACK)	1	15
J0220040	PLUG EL 4P,ELP-04V	1	15
J0220900	SOCKET EL,LLF-01T-1.3E	4	15
M0207000	BINDING BAND,KB-100-1	6	4, 5
M1203490	STRAIN RELEAF BUSHING,SR-7K-2	1	14
M1661000	FUSE 15A,314015	2	15
M2103080	BUSHING,TB-2533(KITAGAWA)	1	15
M2104210	EDGING,EDS-2	4	7, 14
M2104220	EDGING,EDS-1717U	1	13
M2104260	EDGING,EDS-0607U(KITAGAWA)	1	12
M2105930	CLAMP,NAD-04(KITAGAWA)	5	2
M2105940	CLAMP,NAD-06(KITAGAWA)	2	2
M2105990	CLAMP,HL-18-0(KITAGAWA)	4	14
M2107120	*BINDING BAND SG-130*	*2*	*11*
M2108040	SPACER,KGLS-14S	3	7
M2108700	SPACER,KGLS-8RF(KITAGAWA)	3	15
M2109000	WIRE SADDLE,WS-1NS	4	14
M2109010	WIRE SADDLE,WS-2NS	1	14
M2109170	WIRE SADDLE,WS-1NS-V0	4	2

Part. No.	Description	Quantity USA (120V)	Fig. No.
34982060	DRUM FOR DC1560(USA)	1	9
62142540	KEY COUNTER	1	15

★ The above items are supply items only and as such, they must be ordered from your regional office.